FEBRUARY, MDCCCLIX.

THE ZOOLOGIST:

A

POPULAR MONTHLY MAGAZINE

OF

NATURAL HISTORY

AND

JOURNAL FOR RECORDING FACTS & ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,

INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,

MIGRATIONS, NESTS AND YOUNG.

No. CXCIX.

LONDON:

JOHN VAN VOORST, PATERNOSTER ROW.

Price ONE SHILLING.

FARMER'S AND GARDENER'S BOOK.

Price 8s. 6d., the

LETTERS OF RUSTICUS ON NATURAL HISTORY.

EDITED BY

EDWARD NEWMAN, F.L.S., F.Z.S.,

LATE PRESIDENT OF THE ENTOMOLOGICAL SOCIETY.

This work more especially relates to those insects (generally known under the name of blight) which are so injurious to our most valuable crops, as Turnips, Apples, Hops, &c., &c.

PORTION OF CONTENTS.

Blights, or Insects injurious to Vegetables. Gooseberry Grub; the Fly described; Laying the Eggs; the young Grub; Voracity of the Grub; the Grub described; Change of Skin; Burrows in the Earth; Popular Remedies. Aphis or Plant-Louse; Injury it causes; Economy of. Hop-Fly; Influence on Crop of Hops; Influence on the Duty; First Appearance of; Insect Enemies of; Remedies. American Blight. Apple-Weevil; Description of; Economy of; Remedies. Apple-Moth. Apple-Grub; Economy of. Little Ermine Moth. Yellow-Tail. Turnip-Fly; Destructive Powers of; Economy of; Remedies. Turnip-Nigger; Description of the parent Fly; Economy of; Description of the Grub; Remedies. Turnip-Weevil. Turnip-Aphis. Aphides in Apples, Poplar-leaves, and on Roots. Ants and Aphides.

OPINIONS OF THE PRESS.

"There is a wood-cut, some of them most exquisite, to each chapter, and tail-pieces, after the delightful manner of Bewick, are scattered through the work. It is a most delightful book."—*Douglas Jerrold.*

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two or three hours of an equatorial sun soon dispersed the latter: of the former, the large-bodied Lamellicornes became a prey to flocks of insectivorous birds, especially bands of little sandpipers; they ate only the abdomen: the Carabides and Hemiptera they would not touch; many of them remained entire for many days, others fell to fragments after being exposed to the sun. The waters of the rivers at this season were retreating, but the fragments of insects were covered by a stratum of blown sand, and this may serve to explain the method by which masses of the bodies and mutilated remains of insects become imbedded in fossiliferous strata.

"This wholesale destruction of insect life does not occur frequently; in fact, I have witnessed it on a large scale only once a year. On many sultry evenings, in the fine season, numbers of insects are to be seen flying abroad, but the various conditions required for the grand immolation do not combine frequently. I have found many interesting Coleopterous insects by standing in a favorable place on the banks of the river, and observing them as they pass; it is necessary to have the clear western sky in the background. The insects are very uncertain in their appearance; it is not even every sultry night that proves favorable; they appear to be acted upon by atmospheric conditions which we cannot ourselves appreciate or calculate. Many of the insects taken flying in this way are the same as those found drowned on the beach, as related above, especially the Scaritidæ, the Polystichi, Heteromera, &c.; but many others are different,—for instance, many small Longicornes, especially Chrysoprasis, are eminently day-insects.

"One evening on the banks of the Amazons at St. Paulo I witnessed an extraordinary flight of Coleoptera, almost all Scaritidæ; there was literally a shower of them, nearly all the same species—some twenty or thirty—which I had previously found at Ega, on the beach. These insects are extremely difficult to find in their proper habitats; of the thirty or more species of Scaritidæ found flying in the evening, I have not taken more than five or six *in sitû*, and those at roots of herbage in shady places. Sometimes these nocturnal insects may be attracted by a lamp at night, placed in a favorable place, but a prolific night rarely occurs; in this way I have taken a great variety of Pselaphidæ, Scaritidæ, including the Solenogenys fœda; Staphylinidæ, including some extraordinary forms allied to Ophites; also Palpicornes, Calleidæ, even Cicindelæ; numbers of Harpalidæ, genus Selenophorus, but no Longicornes, for many night-flying insects appear not to be attracted by light."

Mr. Stevens stated that Mr. Bates proposed to return to England in the spring of next year, having spent the last eleven years in the investigation of the Entomology of the region of the Amazons.

Mr. Westwood trusted he would receive a hearty welcome from the entomologists of this country, whose collections he had enriched with South-American insects to a far greater extent than had been done by any other individual.

Mr. Stainton read descriptions of twenty-five new species of Indian Micro-Lepidoptera received from Mr. Atkinson, of Calcutta.

Mr. Waterhouse read a paper intituled "Notes on the Species of Elateridæ in the Stephensian Cabinet."—*E. S.*

BRITISH MUSEUM

NORTHERN ENTOMOLOGICAL SOCIETY.

December 18, 1858.—B. COOKE, Esq., in the chair.

This being the Anniversary Meeting, the Secretary read a report of progress during the year, which was most satisfactory.

Exhibitions.

The President exhibited a box full of beautifully-set Hemiptera, principally taken last season.

Mr. Langcake exhibited a box of recent captures for identification, containing many interesting species; amongst them was one Depressaria unknown to the members present, and an extraordinary variety of Phibalapteryx gemmaria.

Mr. Marrot exhibited the box of the evening, an undoubted case of parthenogenesis in Lasiocampa Quercus, and said he took only one larva during the season; it was left in the box it was collected in, spun up at once, came out, and was pinned alive into a pocket box, which box was never opened afterwards until the moth had laid its eggs, died, the eggs hatched, and the young larvæ perished for want of food! There were about twenty-eight egg-shells and twenty-five dead larvæ in the box.

Mr. Gregson exhibited a box recently received from Mr. Dale: in it were many interesting species, especially Phloxopteryx upupana and some Peroneæ, of which hereafter. He then exhibited a box from Mr. Allis; in it were Gelechia nigra, G. Hubneri, Coleophora troglodytella, Anesychnia langrella, &c., and an apple-feeding Yponomeuta; it is expected this will one day be proved a good species. He then exhibited a very long series of Tephrosia crepuscularia, from Kent, London district, Black Park, Shropshire, Cheshire, Lancashire, Westmoreland, Cumberland and Scotland; the latter supplied by Mr. Chapman, of Glasgow; one specimen from Delamere Forest, as near white as possible, and another from the same place, very nearly black, with every gradation of colour between them; the southern specimens, perhaps, a little yellower in the ground-colour than the generality of others, yet not to be separated from some of the northern specimens, proving to the satisfaction of the Meeting that Tephrosia crepuscularia and T. laricaria are one and the same species, the first name standing. He then exhibited some beautiful specimens of Botys decrepitalis, kindly sent by Mr. Chapman, and a number of Cheimatobia autumnaria? taken by Mr. Mawson, of Cockermouth, at the foot of Basenthwaite Water, during the last week in October: this year they are like Oporabia filigrammaria, but as that species would pass away in September, at the very latest, they confirm what has been advanced at these Meetings before, namely, that there is a good species allied to O. filigrammaria. A discussion encued which led to some amusing remarks, it being conceded that no man could confound the specimen before the Meeting with O. dilutaria. He then exhibited a Geometra variety, which he thought Melanippe propugnaria, from Cumberland, and the new Tinea, lately bred, which was brought before the last Meeting, as likely to become British, having been imported in skins from Honduras, observing that it had reproduced itself in a cold room.

Mr. Brockholes observed he had not yet bred it, but expected to do so shortly, when it was asked by a Member, Would the ladies of England thank a bachelor for introducing another destructive insect into their houses, in order to enrich our cabinets? In the box were specimens of Scopelosoma satellitia, from Kendal, nearly black, and a perfectly black Acronycta Rumicis? the variety Salicis of most cabinets, but not of Curtis.

Mr. Johnson exhibited a box of Coleoptera, containing a Lesteva new to the district.

The Secretary then exhibited a box to illustrate "Lepidoptera and their Parasites,—" a paper which it is hoped will be read before a Meeting shortly,—the perfect insect and pupa-case, cocoon and two species of perfect parasites which attack the insect. He then, after the discussion, called attention to a very long series of Leptogramma parisiana? (Boscana?) and made the following observations thereon:—

Leptogramma parisiana? (Boscana?)

In placing this magnificent series of Leptogramma parisiana? (Boscana?) before you, I may observe I have spent much time and trouble in getting them together, in the hope that, from the various forms, we might judge whether they constituted one variable species, or were really distinct and well-defined species. We have to thank those kind friends who have assisted me, but we are especially indebted to Mr. Parfitt, of Exeter, and to the Rev. E. Horton, of Wick, whose kindness in presenting me with specimens and in forwarding specimens for exhibition here, from their own cabinets, at great risk, deserve the best thanks of this Meeting. One of my friends writes me from Yorkshire: "You are not singular in supposing L. parisiana and L. Boscana one species." My attention was first called to this species by reading the Rev. Mr. Horton's remarks in the 'Intelligencer,' and I determined to work out this question, at the same time I worked out the early states of the allied species in this group, and as this is decidedly the most interesting question to us in the family, I have determined to bring it before you first. You will observe that from the top of the series the specimens become gradually lighter and lighter until we see the eighth specimen, which is the lightest autumn specimen yet seen (this belongs to the Rev. E. Horton), and carries us into the true L. Boscana, or summer brood, in regular successive gradations; after which, the remainder lead us gradually down to the darkest or old L. scabrana form again. I take my ideas of the true L. Boscana form from the specimen given to me by my friend Mr. Allis, from Haworth's collection. We now come to the shape of the insects: here again the sexes are permanent in form in both the summer and autumn brood; hence from the personal appearance of the perfect insects, we can only conclude they are one and the same species; size, shape and markings, to the eye of the closest observer, are the same, colour only varying in intensity. We now come to the early state of the species, without which, I grant all I have done and said might eventually be confuted, and about which some who pride themselves on the possession of large collections of Leptogramma care little, preferring either to give all that is known about this species at present, and leaving the further illustration of the history of this insect before you to be worked out as opportunity offers. First, both forms are elm-feeders; this is acknowledged on all hands, but perhaps I cannot do better than read an extract from a letter I received from the Rev. E. Horton, who seems to have paid more attention to the early states of this insect than any other person: he says,—"I could not discover any difference in the larvæ. I extract the following from my journal as a description of the larva: Head brownish black, shining on the first segment; a bilobed patch of the same colour, darkest externally, and shaded lighter to the middle; the rest of the body pale bluish green, of a semitransparent appearance, flattened; skin rather loose, with a few pale hairs; the green becomes more glossy as it approaches the pupa state; the young larva is pale reddish green; legs shining black." I think we may leave the name of these insects an open question; it is probable it will revert to Fabricius's name scabrana.

After the discussion (all being agreed that the specimen constituted one variable species), the Secretary exhibited a long series of Peronea potentillana, *Cooke*, a long series of Peronea Schalleriana, *H. D. Cat.*, and some Peronea comparana, *H. D. Cat.*, and read a paper "On Peronea potentillana, *Cooke*," by C. S. Gregson. The Meeting decided the species a good one.

The President then read the following paper from Edwin Brown, Esq.:—

On Breeding Acherontia Atropos.

"As I esteem it the duty of any one who discovers a new and successful method of arriving at a scientific object to impart that discovery, however little it may add to the general stock of knowledge, I beg to occupy your attention for a few minutes, whilst I mention a plan of developing Acherontia Atropos, which I found to answer exceedingly well during the past autumn.

"At short intervals five caterpillars of this species were brought to me, some found on the potato, the others on Lycium barbarum. One or more of these larvæ had been sorely pinched by the rustics, who held them in great dread, and indeed talked of cutting down "the tree that had bred such venomous animals;" the consequence was one of them soon cast off the larva-skin, and in a short time died. The four pupæ I placed in a flower-pot, well shaded and partly filled with light soil, upon which half an inch of powdered peat was spread. The pupæ were placed upon the peat and covered with a thickish layer of moistened moss (*Hypnum squarrosum*), a short and thick stick being planted in the midst. The pot was then sunk in a hot-bed frame, underneath a wall facing the south, and a hand-glass, perforated at the top, placed over the pot. Here, I argued, I possessed all the elements necessary for success. My friends, however, shook their heads and looked incredulous, whilst I expatiated upon the pupæ being thus moist, without risk of injury from tearing, or the growth of fungus matter—upon the exclusion of all excess of light, their enjoyment of a regular temperature—on the absence of all external pressure, and on the convenience furnished for 'stretching.' It was of no avail, my friends said the plan was 'against nature, and not likely to succeed.' To this I replied, 'It was owing to an imperfection in nature that so few moths exist, as compared with the number of caterpillars, and my plan was offered by way of an improvement on nature.' The result justified my calculations. I obtained a moth from each pupa, and all in fine condition, excepting one, which was somewhat crippled, owing, as I imagine, to a hurt it had received in the larva state."

After a vote of thanks to various contributors the Meeting broke up.—*C. S. G.*

On the Tendency of Species to form Varieties.

By Thomas Boyd, Esq.

I have read the papers on the variation of species in the 'Zoologist' (Zool. 6292—6308) with much interest; and yet they have left an unsatisfactory feeling in my mind: on asking myself, "What does all this prove?" the only answer I could make was, "A possibility." They seem, in common with very much of the argument and discussion on allied subjects in the present day, like a return to the old philosophy, "the anticipation of Nature," as Bacon calls it, and the only result attained, or likely to be attained by it, is that we lose ourselves in doubt, like the ancient philosophers,

> "And find no end, in wandering mazes lost."

The argument, it seems to me, starts upon the smallest possible basis of facts, the known variation in species, and then goes on, without any additional fact, to the possibility or probability of an indefinite extension of this variation. Is this wise! Is it in accordance with the spirit of modern Science?

But the last of the three papers referred to goes much further than the others; it is much more definite in its aim, it claims something of the character of a proof, and it carries the argument into ground scarcely touched before. After ably sketching out the effects of external circumstances on the numbers and variation of animals, the author lays down two points,—*first*, "that the animal population of a country is generally stationary, being kept down by a periodical deficiency of food and other checks," and *secondly*, "that the comparative abundance or scarcity of the individuals of the several species is *entirely* due to their organization and resulting habits, which, rendering it more difficult to procure a regular supply of food and to provide for their personal safety in some cases than in others, can only be balanced by a difference in the population, which have to exist in a given area." This, it seems to me, is far more general and comprehensive than is warranted by the facts of the case; all that is proved is that the want of food and the inability of self-preservation do exercise an influence over the number of species, and that it is probable that these are two main causes of numerical variation; but to go beyond this is to ground conclusions upon our ignorance, for there may be many causes, of which we know nothing, which exercise powerful influence over these phenomena.

In the next paragraph allusion is made to the probability that some varieties of a species might have a better chance of escaping or protecting themselves against certain adverse circumstances than the parent species; as, for instance, unusual length of limb might give an antelope greater facility to escape from the feline Carnivora; and it is argued that, after such a variety had become numerous, any subsequent circumstances which would throw an additional strain on the vitality of such species would result in the annihilation of the parent, leaving only this variety, which is assumed to be a *superior* variety.

Now have we any right to assume that an antelope with longer legs than its parent is superior to that parent? It seems evident that we cannot, in any way, do so, unless we are certain that it has every other power and faculty in the same perfection as its parent, and is exposed to no other disadvantage on account of this partial superiority, and I cannot think there is sufficient ground for such an assumption; the additional speed which would enable it to escape from some enemies might be accompanied with dulness of sight or hearing, which would leave it more exposed to the attacks of others, and in all probability it would be accompanied by a thinner coat, which would render it more susceptible to changes of temperature, and by a necessity for more food, which would throw an additional strain on its other powers, and these and other circumstances of a similar nature would counterbalance the partial superiority supposed; and even if not,—even if any variety thus specially characterized should, under certain circumstances, acquire a numerical superiority over the parent species,—is there any reason to suppose that a subsequent change of circumstances would throw an additional weight into the scale in favour of the variety? I think not. The perfection of any organized being consists in its unity as a whole—in its adaptation to all the phases of its being; and a special modification in one direction, to meet certain circumstances, so far from rendering it more suited for different circumstances, would in all probability produce an opposite result.

But it will probably be objected that this is all very inconclusive; and so it is, and so must all our opinions on this subject be till we are far wiser than we are now. The fact seems to be that there is, among organized beings, a tendency to vary; but a tendency is not a law of indefinite progress; a tendency to increase is not a law of indefinite increase, neither is a tendency to vary a law of indefinite variation. Tendencies can be seen in their true light only when viewed in connexion with other tendencies which modify and set limits to them; and if, as in the present case, we know something more of one tendency than of the opposing ones, we have not, on that account, any right to assume that those of which we know so little are in reality as weak as our knowledge of them is small: the only circumstance that can give us a right to conclude this is the fact that they do exert that modifying effect which they would if they were in existence and in active exercise; and of this fact, in the present instance, we have no proof; indeed the facts of the case seem to me to point, with no unmeaning finger, in the opposite direction—the specific distinctness of species, closely allied and following each other immediately in the course of time, seems now considered almost a geological axiom; nor, so far as I am aware, is there in the whole range of natural science, a single instance of indefinite progress, except in the case of man himself; and here it seems closely connected with, if not entirely dependent upon, his power of abstract conception; that is, upon that power which forms the grand distinctive mark which separates man from all other organized beings.

What we want on this subject is the record and collation of facts, experiments and observations; and if this be done I feel assured that we shall find here, as Kepler did with the irregularities in the orbits of the planets, that the variations return into themselves in constantly recurring cycles.

With regard to the last paragraph, I am quite at a loss to know what meaning to attach to it. Mr. Wallace says, "This progression by minute steps in different directions, but always checked and balanced by the necessary conditions, subject to which alone existence can be preserved, may, it is believed, be followed out so as to agree with all the phenomena presented by organized beings, their extinction and succession in past ages, and all the extraordinary modifications of form, instinct and habits which they exhibit." Does he mean that by the tendency to vary we may explain all the differences that obtain between different varieties of the same species, or between different species of the same genus, or between different genera of the same order; or, further still, that we may trace back all organic life, as we see it now, to some unknown root in the far-off geologic ages, some sponge, or polype, or vitalized cell, from which everything has since sprung. The words I have quoted will bear this construction, and if the tendency to vary were a law of indefinite variation, it might carry out this idea; but, being what it is, simply a tendency, it seems to me that painting such an ideal picture on the subject is like Science sitting down at the feet of Imagination.

THOMAS BOYD.

17, Clapton Square.

Notice of the Various Species of Bovine Animals. By the Editor of the 'Indian Field.' *

I will commence with the musk ox (*Ovibos moschatus*) of the "barren-grounds" of Arctic America. The present distribution of this remarkable animal is, indeed, confined to that peculiar region, similar however to the "Tundras" of Arctic Siberia; but there is evidence of its having formerly inhabited a far more extensive range, and its fossil remains have been discovered even in Devonshire, in England!—one of many evidences of a former glacial epoch in Europe, long anterior to the existence of human beings in all probability. Remains of the rein-deer have likewise been found in England, with shells of now arctic or sub-arctic species, and correlative signs of glacier action in the valleys of the mountains, huge boulder-stones of which the present position has only hitherto been explained, intelligibly, by the transporting power of icebergs, &c. The musk ox seems to stand quite alone in its tribe; though Professor Owen classes it with its very opposites, the buffalos! Its horns, indeed, bear a certain resemblance to those of the Cape buffalo, but are much less spread out in their curvature; the naked muzzle is reduced to its extreme minimum; and the tail is short, like that of Ovis Ammon: the animal is densely covered with wool and long hair, which last falls over the sides so as to conceal its short limbs to near the ground. Most of our readers will have seen the fine stuffed specimen in the British Museum; but a much better idea of the living animal will be gathered from a figure in one of the narratives of Arctic expedition, we forget which (probably Ross or Back), and have not the work to refer to. Most assuredly there is nothing in that figure to betoken a near affinity to the buffalos. The head is carried very low in running; whereas in the ordinary carriage of a buffalo the nose is held out straight in a line with the back. The musk cattle clamber rocks and traverse broken ground with extraordinary facility (assuredly not a Bubaline trait), and their hoofs—unlike those of the buffalos—are adapted to their climbing propensities.† There is even considerable superficial resemblance between the Arctic musk ox and that very remarkable beast, the Budorcas taxicolor of Mr. Hodgson ('Journal of the Asiatic Society,' vol. ix. p. 65), which inhabits the Mishmee mountains at the head of the valley of Asám. But this latter we take rather to be a massive goat or goral; just as the nilgai is akin to our little four-horned chikara, and the bubalis or "Harte-beest" group to the gazelles. It has been stated (with what truth we know not) that the musk cow has only two developed teats,—as in the sheep,—all other bovines having four. The dung of musk cattle resembles that of sheep and goats.

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* Communicated by Charles Darwin, Esq.

† According to Colonel C. H. Smith, "the under parts of the hoof and frog show a singular softish transversely ribbed surface, of a brown-red colour, seemingly intended to secure the foot on slippery snow and ice: the outer (?) toe is round, and the other crooked and pointed."

The Siberian fossil skull figured by Cuvier (Oss. Foss. pl. 172, figs. 6, 7,) has the descending portion of the horns still more closely appressed to the sides of the head than in the existing musk ox.—(*Id.* pl. 17, figs. 15, 16, 17); this fossil animal being referred to the Ovibos Pallantis of the late Professor de Blainville.

The rest of the bovines fall primarily into bisontines, taurines and bubalines, which respectively inhabit, for the most part, or typically, cold, temperate and hot climates; the indigenous taurines of tropical regions obtaining a cooler temperature upon the mountains. The humped cattle, however, form one exception, and seem proper to the hottest regions of the anciently-known hemisphere.

The bisontines sub-divide into the bisons proper, and the yak. All have cylindrical horns, very slight naked muzzle, (most developed in the European zebra), and are clad with long shaggy hair, especially on the head, chin and fore-quarters. The tail is short, not reaching below the hocks.

The true bisons have a very broad convex forehead, and stout horns curving in a semicircle. The head and fore quarters are particularly large and heavy, and the hind quarters reduced, an appearance which is exaggerated by the copious mane and beard in front. They carry the head very low, and commonly stand with their fore and hind feet near together. The orbits of the skull are remarkably prolonged and tubular. These animals inhabit swampy forests and prairies, such as was much of Central Europe in the days of the Cæsars.

The American bison (*Bos Bison—americanus*, L.; Bos Bison of many authors, as distinguished from the next, erroneously designated by them B. Urus). With fifteen pairs of ribs, and consequently but four lumbar vertebræ. The well-known so-called "buffalo" of the western prairies.* We have seen many alive, and have remarked that the tail is not tufted merely at the end, but resembles that of the yak, only with the hair much less developed.

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* Whence the thriving town or city of Buffalo, on the shore of Lake Erie, and a certain familiar ditty appealing to the Terpsichorean propensities of its young ladies by moonlight.

The European bison, visent, wisent or wisund, zubr or (improperly) aurochs, *i.e.* ure-ox (*Bison europæus,* Owen; also *B. priscus* of Bojanus, apud Owen; *Bos Bison*, L., apud Nilsson, as distinguished from the gigantic taurine urus of former days). With fourteen pairs of ribs, and therefore five lumbar vertebræ.* Now confined to the great marshy forest of Bialowikza, in Lithuania (believed to be the only remnant of genuine primæval or purely natural forest still in Europe), but formerly much more extensively diffused, and considered by Owen to be identical with the Bos priscus of palæontologists, which coexisted with the Elephas priscus of what is now the temperate region of Europe—the remains of which last have been erroneously assigned (according to Dr. Falconer) to E. primogenius, which is the mammoth or Arctic elephant of Siberia. In the European, as compared with the American bison, the peculiar bisontine characters are in every way reduced, or more or less softened down in intensity. For an admirable description of this animal and of its habits, *vide* Weissenborn in the 'Ann. Mag. Nat. Hist.' vol. ii. p. 305 *et seq.*, also Nilsson, *id.* 2nd series, vol. iv. p. 419 *et seq.* The bulls emit a powerful musky odour, the chief seat of which is that part of the skin and hair which covers the convexity of the forehead. This is strongest in the rutting season, and is much weaker in the cows. The zubr has an invincible repugnance to the domestic Bos Taurus, which is not the case with the bison of North America; which latter will readily breed with domestic cattle, but the European bison never. (The mixed progeny are said to be infertile). The American is also far more tameable. Each has been known to attain about a ton in weight; but the European bison has greatly degenerated within historic times, and more so if truly identical with the fossil Bison priscus, the horn-cores of which are much longer and straighter, *vide* Owen's figure of a British fossil skull of B. priscus (Brit. Foss. Mam. and Birds, p. 490), as compared with Nilsson's Scanian sub-fossil skull of the modern type (in Ann. Mag. Nat. Hist. 2nd series, vol. iv. p. 415). The existing zubr of Lithuania does not attain to half the weight mentioned; though so late as 1752 one is stated to have weighed 1,450 lbs.

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* This character is not so absolutely constant as is generally supposed; for a cow zubr, examined by Bojanus, had only 13 pairs of ribs; and we have the authority of B. H. Hodgson, Esq., for asserting that the Indian humped cattle have occasionally fourteen pairs. That gentleman being detained in the course of a journey through the Tarai, and seeing a number of skeletons of domestic cattle lying about counted the ribs of several of them, and to his surprise observed the occasional variation referred to.

The Caucasian bison (*B. caucasicus ?*). This animal is little known. It is supposed to be distinct from the Lithuanian zubr; has a black dorsal stripe, which is not seen in the latter, and differently-shaped hoofs. There is also a slight difference in the horns. According to Professor Nordman, who was employed in 1836 on a scientific mission in the Caucasus, (where he was often obliged to make his excursious under the protection of a strong military escort, and a few field-pieces), "this animal, though no longer occurring near the high road from Tamar to Teflis, &c., is not very scarce in the interior of Caucasia. Herds are still found in a few districts by the river Kuban; and the animal is met with on Mount Caucasus from the Kuban to the sources of the Psib, a distance of about 115 English geographical miles. Near the Kaban it is met with, in swampy places, all the year round. In the country of the Abazechians (Abchasians ?) it repairs to the mountains in summer, and is then frequently killed by the Psoehs and other Caucasian tribes. Late in autumn it descends from the mountains to visit the pastures in valleys never yet trodden by the feet of any European, except prisoners of war. It is particularly numerous in the district of Zaadan. Lieut. Lissowski, who studied at Wilna, and possesses a thorough knowledge of the zubr of Lithuania, assured me at Bambori, that the latter animal was *not very different* from that of Caucasia."—(*Vide* Weissenborn, in Ann. Mag. Nat. Hist. vol. ii. pp. 254 and 291). It is very desirable that this Caucasian bison should be properly compared with that of Lithuania. Professor Nilsson assumes their identity, as a matter of course, from known facts connected with their former extensive distribution of the European bison; but until positive and careful comparison, we cannot regard the question as settled, however may lie the probability.

A kind of bison or zubr (more probably than the great taurine "urus," or some animal akin to it), is mentioned in the 'Travels in Tartary' of the old traveller Bell, as existing in his time in the country of the Tzulimm Tartars.—*Vide* 'Journey from Tomsky to Elimsky,' vol. i. ch. iii. p. 224). "On the hills and in the woods near this place," he remarks, "are many sorts of wild beasts, particularly the urus, or uhr-ox, one of the fiercest animals the world produces. Their force is such, that neither the wolf, bear nor tiger dares to engage with them. In the same woods is found another species of oxen called "bubul" by the Tartars. It is not so large as the urus; its body and limbs are very handsome; it has a high shoulder and flowing tail, with long hair growing from the rump to its extremity, like that of a horse. Those which I saw were tame, and as tractable as other cattle." Here we have a distinct notice of the yak, both wild and tame, in a part of Asia where it would appear to be now quite unknown! The name "bubul" applied to it has probably its connexion with Bubalus. Remains of extinct bisons have been found in Siberia, and of three or four species in North America, as figured by Cuvier and by Harlan and others; and we really feel some difficulty to imagine that our modern European bison could, under any circumstances, have developed horns, the *bony cores* of which measure 2¾ feet "from base to point upon the outer curve, 17 inches in vertical diameter [circumference?—surely not bow-string diameter, which gives an amount of curvature quite unintelligible in the particular race or species] and 4 inches from front to back at their base;" as in a specimen of Bison priscus from Clacton, in Essex, noticed in the 'Annals and Magazine of Natural History,' second series, vol. xx. p. 393. The largest horns of the existing Lithuanian zubr do not exceed 18 inches round the outer curvature, and this with their investing corneous sheath! The only known indigenous bovines of America are its peculiar living bison, the musk ox of the Arctic "barren grounds," and the fossil bisontine species referred to. Of one of the latter we possess drawings of a most peculiar frontlet, with narrow yet bisontine forehead and thick horn-cores, stated to be from the celebrated deposit of "Big-bone Lick," in Kentucky, of a dwarf species, which seems to be undescribed to this day.

We have not seen the skull of a yak of pure blood, but suspect that it has not the protrusile tubular orbits of the true bisons.* The general form appears to be a step nearer to the taurines, and there is less inequality of the fore and hind quarters; still fourteen pairs of ribs: long hair on the fore quarters and pendant from the flanks; but the most striking peculiarity is the "chowry" tail. The horns are longer than in the modern typical bisons, and their tips curve considerably backwards—instead of the rigid semi-circular flexure in at least the bulls of the bisons proper. All appear to have the same grunting voice. The general aspect of the yak, it may be added, is distinctly bisontine, and it carries its head low, like the rest of the subgroup.

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* Mr. Hodgson figures a yak skull, in vol. x. of the 'Asiatic Society's Journal,' in his "Illustrations of the Genera of Bovinæ;" from which the orbits would seem to be a little protrusile; but the bisontine peculiarities are exceedingly reduced.

The yak (*Bos poephagus* or *B. grunniens*, or *Boephagus grunniens*) is indigenous to High Tibet, and especially to Eastern Tibet, where still tolerably numerous in the wild state, though the species (as every one knows) is extensively domesticated, and the ordinary tame cattle of that elevated portion of the globe. The wild animal is known as the dong, or ban chour, and an interesting notice of it will be found in the 'Friend of India' for September 30th last.

We now come to the taurines, and among them may be recognised three principal groups:—1, that of the humped cattle; 2, that of which the European bull is characteristic; and 3, the mostly tropical group with flattened horns. All are more or less smooth-coated, our British Highland cattle displaying about the extreme of shagginess among the taurines.

The humped ox (*Bos indicus* vel *gibbosus*) is unknown in an aboriginally wild state; but large herds, the descendants of domestic cattle, still roam about the northern parts of Oudh and Rohilkund, and thus show that the species can maintain its existence, unaided by man, in a region infested by tigers.* It does not appear that it has hitherto been met with in a fossil state, nor can we venture to assert in what country it is truly indigenous; for the domestic races are spread over

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* These *feral* "zebus" are noticed by Captain (now Colonel Sir T. Proby) Cautley, in the 'Asiatic Society's Journal' for 1840, p. 623. He remarks that, "In the districts of Akharpur and Dostpur, in the province of Oudh, large herds of black oxen are, or were, to be found in the wild uncultivated tracts, a fact to which I can bear testimony from my own personal observation, having, in 1820, come in contact with a very large herd of these beasts, of which we were only fortunate enough to kill one, their excessive shyness and wildness preventing us from a near approach at any second opportunity." Another writer notices herds of these wild humped cattle as occurring on the road from Agra to Bareilly. Again, in Dr. Butter's 'Outlines of the Topography and Statistics of the Southern Districts of Oudh, and of the Cantonment of Sultanpore—Oudh,' we are informed that "Bengali bulls and cows are found near Harpu,"—*i. e.* living wild. Their numbers would even seem to have increased of late years, to judge from a notice of them which we saw not long ago in one of the newspapers, in which attention was directed to their hides and horns as objects of commerce. As Dr. Butter distinctly calls them "Bengali bulls and cows," it follows that they are of the small race common in the country, as distinguished from the large cattle so numerous in the Upper Provinces; and Cautley's designation of them as "herds of black oxen" would seem to imply uniformity of colouring, as in aboriginally wild species. We should like, too, to know if their horns assume constantly the typical size and flexure; for these are matters of considerable interest to a naturalist. The animals are understood to have gone wild at one or more epochs, when whole districts were devastated in the grand old style, and in the fine old times of wholesale rapine and slaughter, the remembrance of which is still so fondly cherished by very many.

India, Arabia, great part of Africa, even Madagascar, and would appear to be found so far eastward as Japan; at least old Kœmpfer tells us that the Japanese "have a sort of large buffles, of monstrous size, with bunches on the back, like camels, which serve for carriage and transport of goods only in large cities." The name "buffalo," we may here remark, is currently bestowed on the humped cattle by English graziers; and thus we commonly hear of "buffalo's hump," whereas a buffalo does not happen to have a hump! The extensive herds of the Foulahs, Fellahs or Felâtahs, pre-eminently a race of herdsmen, who spread quite across Africa northward of the equator, consist exclusively of these humped cattle. According to Denham's 'Appendix,' "two kinds exist in Central Africa, one with a hump before and very small horns; the other altogether of a larger size, also with a hump, and immense horns." The latter (of which we have seen a pair sent by Denham to the British Museum) are enormously thick at base, but exhibit the true and peculiar flexure of the species; and again the Galla cattle, mentioned by Bruce and Salt, with immensely long and proportionately thick horns, are humped, and not unlike some big-horned cattle we remember noticing at Madras.* In Madagascar there is a wild humpless race or species, long ago indicated by Flacourt, and since noticed by the missionary Ellis, but the domestic cattle of the island are stated to be all humped, and such are commonly imported thence for the markets of Mauritius and Bourbon. These humped cattle are particularly suited to a dry and torrid climate, are indifferent to the fiercest rays of the sun, seldom seek shade, and never go into the water and there stand knee- or belly-deep for hours, like the humpless cattle of Europe. Being unknown in a primitive wild state, most naturalists still regard them as a mere climatal variety of the Bos Taurus, especially as the two interbreed freely, and the hybrids in every proportion; but there are other instances of species thus commingling. The presence of the hump is but one difference of very many; and it and other distinctions are well shown even in the small fœtus. The one is born with teeth through the gums, the other not so! The whole form is indeed remarkably different. In B. gibbosus the body is shorter and rounder, and the hind-quarters slope abruptly, instead of being continued straight to form nearly a right angle; the limbs are longer and more neatly formed; the ears lanceolate and somewhat pointed, instead of being broad and rounded; the dewlap begins at the chin, instead of before the breast; the eyes are larger, considerably more full and lustrous—indeed worthy of the famous comparison of Homer, his "ox-eyed" Juno! Again, the voice is utterly different, a mere grunt; and the typical flexure of the horns is not the same. The ordinary varieties of colouring are different, especially the Nil-gai markings of the feet not unfrequently seen in the humped cattle; the quality of the coat also is different, and the forehead is smooth or not shaggy.* At rest the humped bull carries his head low as any bison, the neck sloping down in a line with the fore part of the hump. But enough! We shall believe that the humped ox or zebu is a climatal variety of Bos Taurus, when we are persuaded that the knobbed goose (*Anser cygnoides*) is a mere variety of the European tame goose (*A. cinereus*), and not till then; the said geese interbreeding freely as the taurines in question, and producing mutually prolific hybrids! The yak also produces a prolific hybrid with the humped cow; and if *they* are not distinct species there is no meaning in the term. Both species of smooth-coated domestic cattle are well and characteristically represented in the ancient Egyptian paintings. †

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* *Vide* also the figures of cattle in some of Barth's plates.

Occurrence of Whales at Lynn.—A fine specimen of Hyperoodon honfloriensis was found on the 22nd of September last, stranded upon a sand-bank in the Wash, near the mouth of the river Ouse, called the "Ferrier Sand." It measured 24 ft. 8 in. long; the gape of the mouth 2 ft. 3 in.; nose or beak 1 ft. 8 in. to the rising of the crest of the head, which rose nearly at a right angle to a height equal to the length of the beak; the pectoral fin was 3 ft. long; from the tip of the beak to the front edge of the dorsal fin 14 ft. 5 in.; from the hind edge of the fin to the posterior edge of the tail 8 ft. 7 in.; base of the fin 1 ft. 8 in.; the length or height of dorsal fin 1 ft. 10 in.; tail across 6 ft. 11 in. The horns of the crescent-shaped spiracle were turned forwards. No teeth were visible in the mouth until the flesh was cleaned off, when two were found in the lower jaw, at the end, measuring about an inch long. The colour of the animal was a dark bluish slate on the back, inclining to brownish on the sides. On the belly and a little distance up the side, in the region beneath the dorsal fin, it was mottled with white. On Wednesday night, the 3rd inst., whilst Smith, a Trinity pilot, was entering the Wash with his smack, he saw a fine young specimen of the great northern Rorqual (*Rorqualis borealis*) stranded upon the "Wainfleet Sand." He went on shore and dispatched the creature with a boat-hook. When it floated the next tide he brought it to Lynn. I was only enabled to make, satisfactorily, the following admeasurements: length 32 ft. 4 in.; pectoral fin 4 ft.; across the tail 8 ft.—*Edward L. King; King's Lynn, Norfolk, November* 17, 1858.

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* The hair of the crown and forehead is slightly elongated in all taurines, as especially seen in the calves; but it mostly requires to be looked for to be observed. The proper curly front is peculiar to the European type.

† The humped cattle are remarkable for most extraordinary variation of size, from the huge bullocks of Western India (the ordnance cattle) down to the pygmy gyna; but the latter is not a distinct race—merely casual dwarfs, which, when they propagate, usually produce offspring of the ordinary size. For some notice of the Indian breeds of humped cattle, *vide* Hamilton's 'Journey to Mysore,' vol. ii. p. 8 and plates; also 'Transactions of the Agri-Horticultural Society of Calcutta,' vol. vii. p. 112. As in the next group, we think it probable that more than one aboriginal wild race have contributed to produce our domestic races of humped cattle. The books tell us that there is a race or breed in Surat, with a second hump! We should be glad of any information concerning it. We also find that it is currently stated that "the hump is almost wholly composed of fat!" In India, where salt hump is so commonly seen and much relished at table, we happen to know rather better.

Notes on the Birds of Jamaica. By W. Osburn, Esq.

(Communicated by P. H. Gosse, Esq.)

Sandhurst, Torquay,
January 3, 1859.

My dear Sir,

The following letter, which I have just received, contains such graphic pictures of Jamaican Ornithology, that I have thought the readers of the 'Zoologist' would be scarcely less interested than myself in its perusal.

I am, my dear Sir,
Yours very truly,
P. H. Gosse.

To Edward Newman, Esq.,
F.L.S., &c., &c.

"Mahogany Hall, Jamaica,
December 4, 1858.

"Dear Sir,

"The only reason I can offer for the liberty I take in addressing you, as a perfect stranger, is your delightful book on the Ornithology of Jamaica, which has afforded me so much instruction and valuable information since my residence here, for the last twelve months. I have during that time been forming a collection of bird-skins, and given much of my time to the investigation of their habits. My list still falls very considerably short of yours; but, as I have collected, and am still collecting, in some localities which I gather you did not visit, you may perhaps like to have some of the results of my observations, where they appear not to have been anticipated by the large mass of information you collected on the subject during your own visit.

"My first residence was for three months at Grand Vale, in Westmoreland; afterwards at Camp Savanna, near Morgan's Bridge; then at Savanna-la-Mar; and finally here, on the borders of St. Anne's and Trelawny, about ten miles inwards.

"As Westmoreland had already been especially investigated by yourself, it was not likely to yield much new; I have, however, a Caprimulgus not in your list. I know nothing of its habits, it having been brought to me by a negro, in August, shot close to Savanna-la-Mar: the wings reach only half way down the tail; it struck me as very much like our English nightjar in its general aspect, but it has a broad white streak across the breast, rising to a point in the centre, like a circumflex, and festooning on each side broader to the shoulders. The following are the dimensions, taken from the recent bird:—Length 10½ inches; expanse 17 inches; tail 5¼ inches; flexure 6 inches. The wings are rounded; the first quill shorter than the second; the third longest.

"I have had frequent opportunities of observing the curious bird you name, provisionally, in your work, as Acanthylis collaris: I first saw them on the 6th of March last, careering over the dark wood that covers the hill opposite Grand Vale House: it was about five in the evening; the 'Norths' had blown up some heavy clouds, though we had had no rain. From the door-steps I fired at one and brought it down: on going to pick it up, as it lay on the grass, its long wings extended, to my great mortification it gave me ample proof of its powers to rise from a flat surface, by rising at once and flying languidly over the valley beneath, where it disappeared. A large number (perhaps fifty) soon appeared; they darted down the wind with extraordinary swiftness, coming up against it more slowly; then, in a short time, the whole flock wheeled round once or twice in a kind of gyrating column (I have seen rooks in England perform a manœuvre very like it), when the whole disappeared. A week after they appeared again, repeating exactly the same manœuvres: this time I loaded with heavier shot, and procured a specimen. It proved a male, on dissection, and its plumage was in very fine condition. The dimensions agreed very nearly with those you give: I could not, however, make the wings, expanded to their utmost, more than 19⅜ inches, nor, when closed, reach beyond the tips of the forked tail more than 1½ inch. I paid particular attention to the eyes, which are indeed singularly large and lustrous: the only explanation I am able to offer of your correspondent's assertion that the 'irides are blacker than the pupil,' is that these last are of that deep blue so observable in some of the Strigidæ, as, for instance, your Ephialtes grammicus, whereas the irides being dark hazel and opaque, in some sense, do seem darker. The claws were so fully curved as to make it impossible to force the point back to the same plane as that of the sole, and there was a worn patch beneath the first joint of the toes, corresponding to that beneath the tarsus-joint, as if only that portion of the foot habitually touched the surface to which the bird clung. I made a note that, the day after, half-a-dozen again appeared at about 11 A.M., the north blowing, a brilliant day, and no rain, though there was a slight shower the day before. I had no further opportunity of observation until I came to this side (Trelawny), about a couple of months ago. We have lately had such a downfall of rain as rarely occurs, laying large portions of the country under water, and doing considerable damage by torrents. Being out with my negro servant during a little interval in the bad weather, my attention was attracted by a loud cry I did not know: the boy pointed to the 'rain-birds' overhead, which, though at such a height as not to be otherwise recognizable, I knew to be this swift from the revolving column they stopped in their course to form. After the rains I saw them, in much reduced numbers, steadily feeding at a great height. I omitted to mention that the stomach of the one I dissected contained a black mass, fragments of insects, among which small Coleoptera seemed to predominate, many of them of a scarlet colour. On the 21st of last month, a brilliant day, they appeared again, when I made careful notes, at the time, of their habits. It was about 11 A.M. when I noticed their loud cry: I should imitate it by a 'wee—wee—wee,' the last much prolonged. It is very harsh, and I thought at the time in tone it bore some resemblance to that of our common loggerheads: it is audible at a great distance, and appeared kept up by the whole flock. They were then in no great numbers, evidently busy feeding at an immense height, wheeling over a circumscribed space. Every now and then a small party of five or six would set off at a prodigious rate very close together, come down lower, shoot round a cotton tree or steep hill-side, uttering the same cry with peculiar vehemence: they then exactly reminded me of our English swift. From these observations I will venture to add that my impression is that these birds cannot be considered, in any sense, crepuscular, more so than our other hirundines.

"Another very remarkable hirundine attracted my attention almost immediately after my arrival here, which proved your beautiful Hirundo euchrysea. I first saw it in the middle of October: it was a dull overcast day, with drizzling rain; but the beautiful iridescence of the back and head, as it dipped and wheeled over the canes, made it at once conspicuous. I did not see it again till a month after (November 16th), during rainy weather, and on the same day Acanthylis appeared: they were then in great numbers over the common attached to this 'pen.' I made the following note in my journal:—'Their flight is much more like that of the English swallow (*Hirundo rustica*) than any of the island hirundines I am acquainted with. It darts, with arrowy swiftness low over the ground, its pearl-white belly and lustrous green back showing by turns: or another part of the flock will skim over a clump of bamboos, or whirl in rapid circles with poised wings round the thick foliage of the bread-nuts. The whole flock of perhaps two or three hundred constantly moved, so that where there were numbers would be presently quite deserted for another part of the valley. They seemed much more alarmed at the discharge of my gun than is usual with swallows, the whole flock rising and darting about in great alarm. The bird shot at generally descended with a swiftness too great for the eye to follow, then suddenly checked its course near the ground, and joined the rest, with the peculiar chattering of swallows.'

"November 19. A brilliant day, after eight days' almost uninterrupted rain. On going out, soon after sunrise, two or three of the great swifts were wheeling over the valley, and the little golden swallows were very numerous, flocks skimming over every meadow and sheltered corn-piece. The gleam of their heads and backs, as the bright morning sun flashed from them, now ruddy, now green, now bright golden, was one of the most lovely of the many beautiful sights of the tropics. The play of light as they shot along in their rapid skimming flight reminded me of the glancing lustre of flying fish as they leap shining from the water. At a greater height they 'sailed' more, as is usual with the Hirundinidæ; and, rarely, one would spread its tail and wings to the utmost, the latter rather deflexed, and wheel very slowly over a small space, as if toying, or perhaps it was a manifestation of that consciousness of their own gay attire, which is so constantly observable in brilliantly coloured animals. It was at this moment I tried to get a shot; but my attempts were quite unavailing, and they wheeled and skimmed in the most provoking security, within a few feet of the muzzle of my gun: they appeared very constantly, whatever the state of the weather, up at any rate to the 30th ultimo, when I succeeded in bringing one down as it came up against the sea-breeze rather more slowly. I have never yet seen them alight anywhere. The splendour of the plumage, examined closely, exceeded even my expectations. As my measurements, taken from the recent specimen, differ in some important particulars from yours, taken, I presume, from the skin, I will venture to send them:—

"HIRUNDO EUCHRYSEA, *Gosse.*

"Irides hazel. Beak black. Legs brownish black (like that of some Indian ink. I could see no purplish tinge).

"Length 5⅜ inches. Expanse 12 inches. Flexure 4½ inches. Tail 2¼ inches. Wings longer than the tail ⅛ inch. Rictus ½ inch.

"Intestine 5⅛ inches. Two minute cæca ¾ inch from cloaca. Stomach contained a black mass, fragments of small insects, among which coloured elytra of Coleoptera were conspicuous.

"The rest of your description I found very accurate; but you do not notice that the middle and external lateral toes are syndactyle as far as the first joint of middle toes. This struck me as peculiar: Swainson does not mention it as a general characteristic of the class; and in the little Hirundo pœciloma, the only one I had at hand (the rest of my collection being despatched to England), though the toes are unequally cleft, there is not the marked disproportion as in Hirundo euchrysea. The tertials too are much more deeply emarginate, characteristics which, with their brilliant colouring, reminded me of the Meropidæ of Africa. As far as my observations go, there seems, in one or two points, a similarity between the habits of this swallow and the great swift: neither are constant inhabitants of the limestone valleys midway between the coast and the central ridge; both appear during wet weather in large flocks, not so intent on feeding as apparently going over their hunting-grounds, and afterwards, for some days after the bad weather, hawking in flocks of much reduced numbers, as usual with the family. I mention this, however, with much diffidence, as it requires much more extended observation than mine to place the fact beyond doubt.

"I have never been able to hear anything that seems worth any credit regarding the nidification of either species. I am meditating a residence close to the Black Grounds, on the central ridge itself, and my arrangements are already completed, so soon as the weather permits travelling. I am in hopes of obtaining some particulars while there.

"Columba caribbæa is, I hear on all sides, very numerous in the neighbourhood, but I have never been able to catch sight of them, or procure more than two specimens, both females. There are, I think, some very interesting particulars about them. Robinson, whom you quote, I can quite confirm as to the unusual length of the tibiæ. The tarsus is feathered, but only in front; the posterior surface is bare, covered with very small circular scales, flattened, broad and soft. Now, if its habits of alighting on the large limbs towards the centre of trees be taken into consideration, together with its plump, heavy make, loaded with fat (beyond anything I ever witnessed in wild animals), and its short wings, it must be a bird of far from active habits, not given to long fatiguing flights: and will not this, the lengthened tibiæ, be accounted for by their enabling the bird to use its tarsi on the broad branches which it frequents, to support its weight while reposing, exactly like a plantigrade animal?

"The spacious caves of the neighbourhood have yielded me several most interesting species of Cheiroptera; one with an extensible tongue, pencilled at the tip, has much interested me.

"Trusting that these few observations may be of sufficient interest to warrant the liberty I have taken,

"Believe me,
"Faithfully yours,
"W. Osburn.

"P. H. Gosse, Esq."

Scraps from the Far West. By Capt. T. W. Blakiston, R.A.

Fort Carlton, Saskatchewan River.

Dear J——,

Since my last letter to B——, I have made the following short note on the ornithology of this neighbourhood during the winter months that have passed since my arrival. The "winter visitors" are not separated from the "resident natives," because of course at present I cannot separate them with certainty.

To begin at the top of the list: both eagles and hawks* go to the southward, the last of the former being seen on the 10th of November, and the river closed with the ice on the night of the 11th, so that they did not leave as long as there remained open water. From this we may date the commencement of winter. The species of eagle was supposed to be Falco leucocephalus, the white head, neck and tail, being distinctly seen.

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* A small hawk was, however, seen on three occasions during the winter.

Hawk Owl (*Strix funerea*). Specimen shot on the 8th of November, and in middle of winter.

Snowy Owl (*Strix nyctea ?*). Seen on two or three occasions during winter; one appeared to be of rather small size.

Great-horned Owl (*Strix virginiana*). Specimen obtained in February.

Great American Shrike (*Lanius borealis*). I suppose, but am not certain, that this is the same bird that winters far to the south. There is also the same doubt in my mind as to Strix virginiana, which is said to be resident in the Southern States; however, I have specimens of each.

Neither species of Regulus nor Parus hudsonicus have I observed here this winter. I do not think that they go south of this on account of the climate, but am more inclined to think that their absence is to be accounted for either in consequence of there being no pine woods here, or, that their range is not so far west; if so, the latter has well been named Hudson's-Bay tit, as I found it between Lake Winnipeg and that bay, and it is common enough on the eastern peninsula, namely, Nova Scotia, during winter.

Black-cap Tit (*Parus atricapillus ?*). Common. I have placed a mark of doubt because there is one described by Cassin as P. septentrionalis, which is said to differ but slightly, the habitat given being, "Missouri, Utah and Rocky Mountains." I have preserved several specimens for comparison, and if it turns out that my specimens are P. atricapillus, and I cannot discern any difference between them and those I obtained in Nova Scotia, then I shall think that the other species is wrongly named "northern," for surely a bird that winters here may be called more northern than an inhabitant of Utah. It may perhaps be P. occidentalis.

Fringilla linaria,—or whatever it may be called, for there seems much confusion concerning the different species of this genus,—at any rate the American lesser redpole, is here during winter, but not numerous. I have several specimens of this also for comparison.

Snow Bunting (*Emberiza nivalis*). In large flocks till the end of October, after which date but few were observed until the 3rd of December, since which I have seen none.

Pine Grosbeak (*Corythus Enucleator*). In considerable numbers from the 7th of November, and another species supposed to be the

Evening grosbeak (*Coccothraustes vespertina ?*), was first observed a week later, but it never was so numerous as the other. Both were generally to be found about maple trees (*Acer fraxinifolium*), the seeds of which they eat.

No crossbills have been seen, which I account for by the absence of pine woods.

Raven (*Corvus corax*). Always to be seen, and so far from being a solitary bird, as it is called in Europe, I made a discovery in its habits, of which I had no idea before. At the beginning of winter I observed that the ravens, which I saw about sunset, no matter where I was, were always flying towards the same point, and I concluded there must be some large trees somewhere in that direction, where a few pairs perhaps roosted. One day, therefore, after having been out with my gun, I made a point of returning to the Fort in the evening, by that quarter; judge my surprise! when among some clumps of young aspen trees, none of which were above twenty-five feet high, or thicker than my arm, on finding one of these clumps literally filled with ravens, which, on my near approach, took wing and commenced flying about in all directions. I judged, by counting a portion, that there were upwards of fifty in that one place, and that no one should hereafter say, "Oh! they were only a lot of crows," I shot one, which I keep as a specimen. I have been to the same spot on other occasions during the winter, and always found my black friends. It is wonderful with what regularity of time they repair to their roosting-place in the evening, and leave again in the morning, by pairs, for their day's hunt; one pair flies directly over the Fort each morning, and as I sit on watch for the minute-hand of the chronometer to come round to each hour of observation,* they give a croak as they fly over, as a morning salutation I suppose, at any rate I give them the credit for such civility, and looking to see the time, I find it the same within two or three minutes, but gradually earlier and earlier, for the sun, which is their clock, is each day lengthening his course above our horizon. The raven is only known by the name "crow" here.

Magpie (*Corvus Pica*). Seen about the whole winter. I have specimens for comparison with the European bird.

Canada Jay (*Garrulus canadensis*). Common.

No species of Sitta seen; probably on account of the absence of pine woods.

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* Capt. Blakiston holds the post of Magnetic Observer to the Government Exploring Expedition in British North America.

Picus canadensis was observed on a few occasions; sometimes in company with the downy woodpecker (*P. pubescens*). The former appears to take the place of P. villosus. It would be interesting to know where this species ceases to range.

Tetrao umballus and T. canadensis I have not seen west of the forks of this river, which you will see by the map is a little east of this. Certainly there are no woods suited to the latter.

Sharp-tailed Grouse (*Tetrao phasianellus*), is a general inhabitant of the semi-wooded portions of these northern plains. It is usually in packs of large or small size in the fall and winter, but I cannot yet speak as to the other seasons of the year. If it is not the "prairie hen" of the southern plains, it certainly takes the place of that bird in the north. I was always under the impression that the prairie hen was T. Cupido, but you will be able to settle this point. The food during the winter appears to be usually the seeds of Rosa blanda, the ordinary briar of the plains or snow-berry (*Symphoricarpus racemosus*), also the buds of a species of willow (*Salix*), but in the fall their food was different. I have opened the crops of many, and Mr. Bourgeau, our indefatigable botanist, kindly furnishes me with the names of the seeds, &c. I find within them.

Willow Grouse (*Lagopus Saliceti*). Although I have hunted diligently for this bird, I have not found one during this winter, and have only heard of a single specimen which was shot to the west of this, in about the same latitude. It was sent to me, and I have preserved it.

I have written to two or three gentlemen connected with the fur trade, to procure me specimens of each kind of ptarmigan known in the north, because Mr. Gould thinks there is one yet undescribed closely allied to L. Saliceti.

As to water birds, none are to be seen here in winter, as there is not an inch of open water anywhere.

THOMAS BLAKISTON.

Notes on the occurrence of rare Birds in Devon and Cornwall in 1857 *and* 1858.—Purple Heron (*Ardea purpurea*). On the 30th of October, 1857, I bought an immature bird of this species at the shop of a poulterer in Stonehouse.

Gray Lag Goose (*Anser ferus*). On January 18th I bought a fine old male in the Plymouth Market, shot in Cornwall, and on the 25th of November I obtained a female in the market at Devonport, which was killed on the river Tamar. This species is very uncommon with us, the above being the only two I ever observed in our markets, although I have been for many years on the look-out for them.

Great Snipe (*Scolopax major*). In November, 1858, I saw a fine example of this bird, in the flesh, killed by a gentleman residing near Plymouth.

Alpine Accentor (*Accentor alpinus*). On December 20th, 1858, I observed a pair of these rare birds on the cliffs near Plymouth, but unfortunately had no gun with me. They were very tame, and allowed a near approach, but although I was at the spot in less than an hour afterwards, with my gun, they were not to be found. I have since searched the coast daily, but without the least success. The day before they appeared we had a most tremendous thunder-storm (a very rare thing in December), and I fear the constant severe gales we have since experienced must have driven them inland. Their actions, when hopping about on the grass on the top of the cliff, were very like those of the common hedgesparrow, but on being disturbed they immediately flew to the rocks below. Their note resembled the syllables, "tree, tree, tree," as described by the Rev. F. O. Morris in his 'British Birds.' On Monday, January 10, I had the good fortune to shoot them after a search of three weeks: I examined the stomach of one, which I found to be very muscular, and contained gravel, fine sand and seeds, but no insects. The only other Devonshire specimen of this bird I ever saw was sent from Teignmouth to Plymouth to be stuffed, together with a fine old male black redstart (*Phœnicura Tithys*). It appears that these birds frequent the same localities, for the place where I saw the alpine accentors was an excellent one for the black redstart.

Spoonbill (*Platalea leucorodia*). On December 24th, 1858, I saw a fine white spoonbill that was killed about a fortnight before, on the St. Germain's River, by Mr. H. Spencer, of St. Germains. It was stuffed by Mr. Percy, of Plymouth, for the Earl of St. Germains.

Little Gull (*Larus minutus*). A few days since Mr. Bolitho, bird-stuffer, of Plymouth, had a beautiful specimen of the little gull to stuff for a gentleman living near Plymouth: it was killed in the neighbourhood.

Gray Phalarope (*Phalaropus lobatus*). Some of these birds have been killed at Plymouth during the past autumn; they are generally considered rare, but a few may be seen every autumn in Plymouth Sound during the equinoctial gales: their actions at such times are very elegant; they alight just outside the breakers, where the froth and sea-weed have accumulated, swim with extraordinary activity and lightness, constantly whisking their bodies round, and incessantly nodding their heads and dipping their bills in the water, in search of food. So tame and fearless are they at these times that I have actually seen them give a little spring and flutter only when fired at and missed, and immediately go on feeding as if nothing had happened. The stomachs of those I have examined contained the remains of insects and what appeared like small particles of coal. I have never seen these birds on the land, but a friend of mine tells me that he once saw two, during a heavy gale, come in from the sea and alight on the mud banks of the river, and run about just like sandpipers. In 1846 an extraordinary flight of gray phalaropes visited Plymouth and the neighbouring coasts: they remained about three weeks, and in such numbers were they that I saw a sailor with an old rusty musket literally filling his pockets with them: on my asking what he intended to do with so many, he coolly told me that they made capital pies. It seems strange that the red-necked phalarope (*Phalaropus hyperboreus*) should be comparatively so rare, considering it breeds in Scotland; for, among the great number of phalaropes I examined when they were so plentiful, and at other times, not one of the rednecked species could I find; indeed I only know one instance of its having been obtained in Plymouth.—*John Gatcombe; Wyndham Place, Plymouth, January* 15, 1859.

Occurrence of Rare Birds near Carlisle.—The following birds, now in the possession of birdstuffers in Carlisle, have been shot in the neighbourhood during the months of October and November, 1858.

Black Tern (*Sterna nigra*). A pair of these birds were shot on Rockcliffe marsh, in October, in their autumnal moult; the back and wings are of a deep slate-colour; the other parts, except around the head, are white.

Stock Dove (*Columba œnas*). A bird was shot on Duncan lime-kiln, near Ecclefechan, in November, which has proved to be this species.

Whimbrel (*Numenius phæopus*). This bird leaves the north in autumn for the southern districts, where they pass the winter; the bird before us, which was making towards our shores, was shot at Lilloth, in October.

Bohemian Chatterer (*Bombycilla garrula*). An individual bird of this species was shot from a large flock, in November, at Newby Cross; no others have been observed up to this time: it is only during severe weather that they approach near towns and villages.

Great Gray Shrike (*Lanius excubitor*). One bird of this species was shot at Roughtonhead, on the 7th, and another at Blackwall on the 10th of November: they are often met with in the North in the winter season; they are constant attendants upon the fieldfare and redwing, and when want is exhibited by the enfeebled bodies of the latter, the shrike, which is ever ready to attack, terminates their existence.

Crossbill (*Loxia curvirostra*). A small flock of this species was observed between Coathill and Armthwaite, where there is abundant food at High Stand and the adjoining neighbourhood of Eden Brows: large numbers of them settled here in the winter of 1856: their food is the seed of Scotch fir cones.

Will any reader of the 'Zoologist' kindly inform the writer to what bird the nest belongs which was found by him on a spruce fir, near the top, containing four white eggs; the nest was composed of twitch-grass, such as may have been ploughed up and laid for some time; the eggs, which are white, resemble the wryneck's in shape and colour, but are scarcely as large as the redstart's.—*Thomas Armstrong; 12, Barwise Court, English Street, Carlisle.*

Occurrence of Rock Doves at Beachy Head.—On the 6th of January I purchased two rock pigeons (*Columba livia*) of a boy, whose father had shot four out of a large flock of some hundreds, at Beachy Head, a day or two before. A friend also told me that he had seen and shot at a flock of about forty, at the same place, on Saturday last. —*John Dutton; South Street, Eastbourne.*

Occurrence of the Pomarine Skua (Lestris pomarina) *at Birting Gap.*—A coastguard man brought me a good specimen of this rather rare visitant on the 5th of January, which he had shot at Birting Gap, near Eastbourne, a few days before: it is in exactly the same state of plumage, in fact a *fac simile* of Yarrell's fine plate. Weight, 13½ oz.; length, 17½ inches; breadth, 3 feet, 7½ inches. I did not ascertain the sex. It was rather lean. The stomach contained a little green matter, also a few small worms. Two middle tail-feathers about half-an-inch longer than the next feather on each side; back, scapulars, tertials and upper tail-coverts umber-brown, margined with wood-brown; great wing-coverts uniform amber-brown; wing-primaries blackish brown; tail umber-brown; under tail-coverts broadly barred across with umber-brown and wood-brown: legs pale blue; the whole of the feet black. Birting

Gap is about five miles east of Seaford, at which place the Rev. R. N. Dennis, Rector of East Blatchington, procured a specimen on the 7th of October, 1858. Doubtless we shall hear of more captures this winter.—*Id.*

Occurrence of the Black Swan (Cygnus atratus) *in Somersetshire.*—In the spring of last year, five of these birds were shot in North Moor, near Bridgwater, Somersetshire. I did not at the time ascertain the species, but I have lately had the opportunity of seeing one of the five at Taunton, when it clearly appeared to be the C. atratus of Keill (Anas atrata, *Latham*), the whole plumage being black, or very nearly so, and the bill red, with white marks near the point. It measured from the tip of the bill to the end of the tail, 3 feet 10 inches. I could not measure the expansion of the wings, as the bird was prepared for being stuffed. The birds, when first seen, were far from wild, allowing a near approach before they attempted to fly off. This may have been from excessive fatigue. Were they foreign immigrants, or is it more probable that they escaped from some preserve? If immigrants, where did they come from?—*Thomas Clark; Halesleigh, January* 5, 1859.

Remarks on the Southern Petrels.—A very common and well-known bird is the Pentado petrel (*Procellaria capensis*), commonly known as the "Cape pigeon," from July to December; it is by far the most numerous bird between the latitudes of 30° S. and 40° S.; during the rest of the year it is seldom seen. I have not been able to ascertain where it breeds, as it is never seen in the islands of the Southern seas; and at the time of the year when the other birds are nesting it is found plentifully out at sea. It is very remarkable the preponderance of marine birds in cold climates over those in tropical seas, being exactly the reverse of that which usually obtains on land, but perhaps they are not quite so numerous as people imagine, as we must remember that a ship at sea draws all birds towards it for a circle of at least 20 miles in diameter. When caught, these birds, as indeed most of the petrels, vomit a quantity of strong-smelling oil, not as a means of offence, but out of fright; their cry is like a piece of iron drawn along a very large-toothed comb. It is useless to describe these pretty birds,—they are too well known: their proper habitat is from 27° S. to 41° S., but they often follow a ship as far as 24° S., and once one followed the ship I was in as far as 17° S., but the thermometer was only 70° in the shade; that day I saw Tropic birds, flying fish and a Cape pigeon all together. There are a great many species of petrels in those seas: I made out ten different species; the names of some I do not know, and I am certain that many more would be made out if one only had more facilities for getting them. The sooty petrel (*Puffinus major*), called by the Australians "the mutton bird," is common in July and August, but retires to breed in September; it makes a burrow in the ground horizontally from two feet to as much as six yards, and lays one cream-coloured egg at the end of it. The bird is brown above and white below, feet yellow, beak blue; its feathers fit very close and have a glossy appearance; it is very fond of diving, poising itself in the air at a height of 20 or 25 feet, it shuts its wings and takes a header straight into the water, sometimes it stops under several minutes, and when it comes up shakes the water off like a dog: they open their wings under water, and use them very rapidly; like all the other petrels they fly with their legs stretched out behind them. Several of the petrels are very local: the whitecheeked petrel (*Procellaria æquinoctialis*), for instance, is never found east of the Cape, but goes generally farther north as far as 26° S., whilst several others are never seen to the west of it: one of them is the longnosed petrel,—I do not know its name but there is an unnamed specimen in the museum at Calcutta; it is blackish brown, with black feet and a bright yellow beak; its nostrils, which are very large, run all down its beak as far as the bend. There are several others, as the necklace petrel and the beautiful little mow petrel, with which I am not sufficiently acquainted. The stormy petrel is also seen, but is not very common. Many people suppose that these petrels follow the ship all night, and certainly you often see a bird or two flying about at all hours of the night. Once about 1 A.M. a Cape pigeon, as it was flying over the ship, hit against a rope and fell on the deck. You also sometimes see the same bird for two or three days together; and a naval officer told me that once a Cape pigeon, with a red ribbon round its neck, followed the ship he was in for 1500 miles into 20° S. They say that if the birds were to sleep on the water the ship might be 100 miles off before morning, and as they do not fly high it is not likely that they would find it again; but it seems to me that this is as absurd as the poet's idea of their sleeping in the air,—

> That oft the sleeping albatross
> Struck the wild ruins with her wings,
> And from her cloud-rocked slumberings
> Started—to find man's dwelling there
> In her own silent fields of air:

for although you do see birds at night they are not common: also if you mark twenty or thirty you will seldom see one again; but sometimes one will appear after two or three days. It seems to me that they sleep on the water, and in the morning, knowing that their best chance of breakfast is in the wake of some ship, they fly high to look for one; some find the ship they were with before, others another: this seems rendered more probable by the fact that at sunrise very few birds are about the ship, but soon afterwards they begin to arrive in great quantities.—*F. Wollaston Hutton; Lieut. 23rd R. W. Fusiliers.*

Colouring of the Eggs of Birds.—I have long been desirous to ascertain some particulars respecting the minute anatomy of the mucous membrane of the oviducts of birds, during the laying season, but the opportunity of making the needful observations has not occurred to myself, and year after year I have suffered the proper period to pass without taking adequate steps to obtain the co-operation of those who unite the ability with the opportunity to aid me in the inquiry. It is well known that the eggs of birds differ not only in form but also in colour and texture, and that in many instances the colour and markings of the egg-shell are almost as characteristic as the plumage of the full-grown bird. In the egg-shell of the emu we have a green colour which seems to be analagous to the very remarkable green pigment in the maternal portion of the placenta of the puppy. In that of some other birds, as the Guinea fowl, we see a reddish brown, affording one of many illustrations of the cognate character of the complementary colours green and red. Again the egg-shells of many birds present various shades of deep brown and olive up to perfect black. As an example of the black I would invite especial notice to those of a breed of black ducks. The black colour of these shells is applied in the most irregular manner as regards both the quantity and the distribution. Sometimes the shell is almost universally of a deep black; sometimes a shell, remarkably white for that of a duck, is partially smeared with black as if daubed with a shoe-brush. The eggs of many birds are spotted in such a manner as to form a characteristic pattern. It seems perfectly reasonable to suppose that there must be some special anatomical arrangement destined to produce the varieties of colour just alluded to, and my conjecture is that for some of the modifications the provision may consist in the proportion and distribution of the minute veins. For example, retardation of the circulation and detension of the blood in the veins seems to favour the production of black, as in the case of the black pigment of the choroid coat of the eye and the co-existence of the *venæ vorticosæ* of that structure. This capillary arrangement may be such as to produce a pattern, and this inscribed on the egg before its expulsion would give it the peculiarities belonging to its particular species. The case may not be quite so simple as here supposed. Besides the capillary vessels, the follicles and the epithetial element of the mucous membrane of the duck are very probably concerned in producing some of the phenomena. The deposit of earthy matter, forming the shell of the egg, may itself be brought about by something like the conditions which determine the deposit of bony or earthy matter beneath the attached surface of serous membranes. I shall be greatly obliged if some of the readers of the 'Zoologist,' who may be skilled in making fine injections and microscopic researches, would take advantage of the coming spring to make some of the inquiries here suggested.—*Thomas Hodgkin ; 35, Bedford Square, January* 24, 1859.

A Word on Otolithes.—It may perhaps interest your ichthyological correspondents to hear the results of my examination of the otolithes or ear-bones of fish. I have examined upwards of one hundred species, and can now positively state that they possess generic characters, and I believe I can as positively state specific ones also. Such is unquestionably the case with the Gadoids; of course the specific characters are less marked than the generic, but with care can be made out. I have also discovered that the Gadoids were in great numbers during the deposition of the crag, having obtained otolithes of cod, whiting, whiting pout, pollack, &c, and, from the Lower Marine of Hampshire, the whiting pout and some closely-allied species. The greater part of my series is at present in the hands of Professor Agassiz, to whom they were forwarded after my return from the States last autumn: as soon as I again receive them, I shall be most happy to show them to any of your correspondents who may feel an interest in the subject. As I purpose still continuing my investigations, I will inform you of any further results.—*Edmund Thomas Higgins ; 2, Tamworth Place, Redland Road, Bristol, January* 17, 1859.

Food-plant of Lycæna Agestis.—When I took the 'Zoologist' in hand, and saw Mr. Morris's paper (Zool. 6336), I expected he had been so fortunate as to have found the larva of Lycæna Agestis feeding on the Helianthemum ; but I find, on reading it, that he has only confirmed my experience that it is the Erodium, and the Erodium only, on which the larva feeds. Mr. Morris says, "L. Agestis is often found very abundantly on the downs in this neighbourhood, where the Helianthemum is also plentiful." I hope Mr. Morris will make himself better acquainted with the Botany of Surrey. Again, he says, "I have also taken L. Agestis at different times in localities so far from the chalk or sand that I am certain there was neither Erodium nor Helianthemum within miles:" here, again, what he shows is simply want of botanical knowledge; for the Erodium is found in plenty on the banks of the canal at Norwood, but no Helianthemum: thus Mr. Morris proves that L. Agestis is found where its food-plant grows in abundance. Helianthemum, as I have stated before, will only grow on chalk or limestone, while the Erodium grows in open places, where there are grassy slopes, such as run all through the Surrey hills; on the high mountain ridges the Erodium is rare, but in those places the Helianthemum grows in abundance; in such localities L. Agestis is rare. I am much obliged to Mr. Morris for calling my attention to the Surrey hills, and more particularly to the canal at Norwood, as it proves all that I wish. If Mr. Morris can spare a few days next summer I hope he will search well the Helianthemum for the larva of L. Agestis, for I can assure him it will be a discovery when he finds one; it does not follow that because Mr. Morris finds L. Agestis where the Helianthemum is found that it must be its food-plant.—*H. J. Harding; 1, York Street, Church Street, Shoreditch, January* 5, 1859.

[This discussion must now terminate for the present, to be renewed at some future time, when Mr. Doubleday, Mr. Logan, Mr. Harpur Crewe, or some other close observer of larvæ, shall actually breed Lycæna Agestis from the larva.—*Edward Newman.*]

Food-plant of Sphinx Convolvuli.—I was extremely glad to read Mr. Douglas's paper on Sphinx Convolvuli (Zool. 6337). I believe the larva rarely or ever feeds upon anything but the greater or lesser bindweed (*Convolvulus Sepium* and *C. arvensis*, L.), and the perfect insect is thence most properly named Sphinx Convolvuli. I know an entomologist in Kent who has several times bred the perfect insect in April and May, from larvæ taken the previous autumn upon C. Sepium. A cousin of mine has now in his possession a very lively pupa, the larva of which was taken last September, at Eastbourne. — *H. Harpur Crewe; Drinkstone, Woolpit, Suffolk, January* 14, 1859.

[I wish that any gentleman who finds either the larva or pupa of this insect would oblige us all by transmitting a minute description of them to the 'Zoologist.'—*Edward Newman.*]

Food-plant of the Genus Acronycta.—I have read with much interest Mr. Gregson's remarks (Zool. 6338), under the above heading. I am able to add three more food-plants to those he enumerates for Acronycta Alni, *viz.* beech, sallow and black Italian poplar. I have three times had the larva, and respectively from the above-mentioned trees. My brother, a few years since, brought me a fine pupa, the larva of which he found and fed up upon alder, and my friend Mr. Herbert Bree beat a full-fed specimen from oak the year before last. Mr. Gregson remarks that he never saw A. Rumicis on its titular plant: this is certainly not the case in Derbyshire, where I have seen the larvæ feeding upon all the common species of Rumex, and in profusion upon the common sorrel (*Rumex acetosa*): this species, at any rate, is not, I think, misnamed. I am, however, entirely at a loss to conceive how A. Ligustri came by its title; I have taken the larvæ in some plenty on ash, but never, except in one instance, upon anything else; this exception was at Malvern, where I once beat two small larvæ from hazel, fed one of them up upon that tree, and bred the moth; I do not believe it ever feeds, or did feed, upon privet, but I may be mistaken. The favourite food-plant of A. Aceris is certainly sycamore; upon this tree the larvæ used to occur in some plenty, when I was at Trinity, in the environs of Cambridge: during my residence in Suffolk, however, I have myself beaten it from maple and oak, and seen

it beaten from birch. A. auricoma certainly does not take its name from the larva, the hairs of which are sooty black. A. leporina is not confined to birch and black poplar; I have taken a score or more of the larvæ upon alder, and have several times seen it upon the Ontario poplar: the pale green larva with white hairs is not confined to poplar; I have frequently beaten it from alder, and still oftener from birch, both in Kent and Derbyshire: I never met with more than three specimens of the canary-coloured variety (if variety it be); one of them was feeding upon aspen, the other upon birch. At Cambridge the larva of S. tridens used to be rather common in October on the whitethorn hedges at the back of the colleges.—*H. Harpur Crewe; Drinkstone, Woolpit, Suffolk, January* 14, 1859.

Larva of Heliothis marginata.*—It may be interesting to Mr. Brockholes (Zool. 6338) to know that the larva of Heliothis marginata is common in some parts of Suffolk. All the varieties he mentions occur, and in the same ratio as to rarity, *var.* No. 3 being far the most scarce. I have taken this larva in various parts of England for some years past, but never upon anything except the thorny rest-harrow (*Ononis campestris*, Koch); it eats the seeds and flowers, seldom, if ever, the leaves; I never saw it upon O. arvensis; I have been told that it feeds upon various species of crane's-bill, but with what truth I know not. That it does feed upon other plants than Ononis campestris I am almost sure, for I have taken the perfect insect at sugar in a locality where little or no Ononis of either species occurred. I was once travelling about with a number of these larvæ, and located for a time in a village where no Ononis grew; after trying various experiments I found that they fed freely upon the unripe seeds of the sweet pea. The perfect insect, when bred, is almost always dwarfed.—*Id.

Larva of Tæniocampa cruda.*—The caterpillar fastens two leaves together, lying curled up between them during the day-time. I thought it must be, at least, a good Ceropacha, and went on collecting them till I had "amassed" about two hundred. I shall not soon forget my disappointment, as day after day my friend T. cruda emerged. My suspicions had already been grievously excited, by observing that the larva entered the earth to effect its transformation; the whole of the genus Ceropacha, if I mistake not, spinning up between leaves, or in moss, &c. The larva is extremely variable, and though preferring oak, will readily feed on hazel and sallow. The pupa may be found from the beginning of July to March.—*Joseph Greene in the 'Naturalist.'

Larva of Tæniocampa cruda.*—This larva appears more than any other to delude and annoy the collector. The protean variety of its colours beats all description. I found a variety this year and last, which was pale green with a very pretty orange and red spiracular stripe. In addition to its other troublesome qualities the wretched larva is a cannibal.—*H. Harpur Crewe; Id.

Larva of Orthosia Upsilon.*—I have taken the larva of this insect in some numbers near Stowmarket, when sugaring just after dark, crawling up the pollard willows, and occasionally upon the stem of the black Italian poplar. It conceals itself during the day amongst the grass and roots at the foot of the tree, or under a piece of loose bark, and as soon as it gets dark, climbs up to feed on the leaves. It is a dark dingy blackish larva, and is full-fed about the 7th of June. It feeds most voraciously, and attains its full size with marvellous rapidity. It remains a very short time in the pupa state, sometimes barely three weeks. In confinement all my larvæ buried, and spun a cocoon under the surface of the soil.—*Id.

***Larva of Orthosia lota.*—The egg would appear to be laid on the bud, as the larva**

is almost invariably found among the young tender leaves, spinning four or five of them together when young. It afterwards conceals itself, eating only at night. It is a most voracious feeder. As a rule, I should say it prefers sallow to willow; I have not met with it on poplar.—*Joseph Greene; Id.*

Larva of Anchoscelis pistacina.—I took the larva of this insect in some plenty last year, at the end of May and beginning of June, by sweeping the mowing grass in the meadows round Stowmarket. It closely resembles the larva of Hadena oleracea, and is sometimes bright yellowish green, and at others reddish brown with black spots. It feeds voraciously upon the leaves of the three species of meadow crowfoot, Ranunculus bulbosus, R. acris and R. repens. It spins a very tight, neat earthen cocoon, in which it remains some weeks before assuming the pupa state. This cocoon when kept dry becomes exceedingly brittle. The eggs which I have had were laid in the autumn, and hatched in the spring.—*H. Harpur Crewe; Id.*

Larva of Scopelosoma satellitia.—The larva of this species is very singular in its habits. I do not allude to its carnivorous 'propensities.' In this respect unfortunately it is not singular. Sometimes, when young, it feeds on trees, and afterwards on low-growing plants; at other times it appears to invert this order of things. I found a number of them last spring about half an inch long, feeding on the common primrose, but when placed in a box, containing leaves of the wych elm, they immediately forsook the former and devoted their energies to the latter. Conceals itself during the day.—*Joseph Greene; Id.*

Larvæ of the Genus Xanthia.—This highly interesting genus is well represented in Suffolk, as I have myself taken the whole six species; and this appears to be a suitabte place to make a few remarks on the habits of the larvæ of this genus. The general opinion seems to be, that when young they feed on the seeds of various trees, and afterwards leave them for various low-growing plants. That this is by no means necessarily the case, I have had abundant opportunities of proving. For instance, X. citrago was nearly full-fed when beaten from lime, and in confinement they not only preferred that tree as food, but would not touch any other. At Playford I beat the larva of X. ferruginea in the greatest profusion from the wych elm of all sizes, from a week old to their full growth. Again, the five pupæ of X. gilvago, which I dug up this year in Derbyshire, were all at the roots of elm, there being no plants at all near. The same remark applies to X. xerampelina. Indeed, with regard to this latter insect, I entertain little doubt that leaving the tree is the exception and not the rule. I must at the same time acknowledge that I have not succeeded in finding the larva. I am very anxious to know farther, whether the eggs of the different species in this genus hatch in the autumn or not? I believe the general idea is that they do not. My own impression is that they *do* hatch and hybernate. My only reason for thinking so is, that in October I found, in beating some loose grass, weeds, &c., in a very small plantation, two larvæ of this genus, about half an inch long. I cannot state the species, as there were both ash and elm in the plantation, and the larvæ (when young especially) are so much alike that it is difficult to discriminate them. My notion, therefore, from this circumstance is, that the eggs are hatched in the autumn on the trees, and that just before the leaves fall the larvæ descend to hybernate among the weeds, &c., and in the following spring ascend them for the purpose of feeding again. This idea is much strengthened by the fact that X. ferruginea (the only species, unfortunately, I can speak of from experience) may be found nearly three-quarters of an inch in length, when the buds of the elm have scarcely burst. These remarks are only intended to provoke inquiry, and I shall feel grateful for any information on the subject.—*Joseph Greene; Id.*

Occurrence of Sophronia emortualis near Brighton.—A specimen of this insect was captured in this town, on the 18th of June, 1858, by Mr. Pocock. Unfortunately the specimen is not in good condition, and it would therefore be difficult to describe it, but a few characters may be given by which it may be readily distinguished from any of our other Deltoides. In size it approaches Herminia tarsipennalis, and when perfect the colour may perhaps agree with that species, but in the specimen recently captured there is a distinct yellowish tinge; the first line arises on the costa, and descends almost perpendicularly to the inner margin, in this nearly approaching H. grisealis; this line is but slight and indistinctly represented on the under wing; the second line rises on the costa beyond the middle, and by a slight but uniform curve passes across the wing to the inner margin, and is continued quite through to the inner margin of the under wing: this line does not arise on the costa and then extend to the outer margin, as in H. derivalis, but the point which actually crosses the costal nerve is the most distant from the base of the wing: both these lines are well defined, and appear of a pale yellowish or cream-colour, margined with darker on the inner side; the character of the second line would be best understood by a reference to Ephyra punctaria, but it is much more boldly defined than in that species. The posterior margin of the reniform stigma is faintly outlined with pale yellow or cream-colour. The state of the specimen precludes further remarks.—*H. Cooke; 8, Pelham Terrace, Brighton, January* 4, 1859.—*From the 'Intelligencer.'*

Discovery of a New Nepticula.—Mr. Edleston lately sent for determination a number of insects, and amongst them two specimens of a Nepticula taken amongst Spanish chestnuts, and for which Mr. Edleston proposed the name N. castanella: this appears to be a distinct species, something allied to N. tityrella, but the fascia straighter and placed nearer the hind margin. We regret to learn that Mr. Edleston was unsuccessful in finding any Nepticula larvæ in the leaves of the Fagus castanea last autumn, having apparently demolished the whole tribe the previous year.—*H. T. Stainton; January* 10, 1858.—*From the 'Intelligencer.'*

Is Micra parva double-brooded?—I should like to propound the following query to the readers of the 'Zoologist,'—*viz.*, is Micra parva double-brooded? M. Boisduval gives this species as occurring in July, and its congener M. ostrina in spring and summer. Now I take M. parva on the 12th of June, in good condition, in a place I had hunted over day after day last year, swarming with Satyrus Semele, Lycæna Agestis, &c. Can any of the readers of the 'Zoologist' tell me in what state these species are now, and where?—*G. R. Crotch; Uphill House, Weston-super-Mare, December* 26, 1858.

On the Propriety of Including Imported Species in the List of British Insects. By FREDERICK SMITH, Esq.

IT is a fact, well known to entomologists generally, that a large number of insects included in our Fauna are of foreign origin, and I think a few words on this subject may elicit from others opinions as to the time when, and under what circumstances, we are justified in including imported species in the British list. For some time past I have paid considerable attention to the Formicidæ, particularly our native ants, and I find two or three, undoubtedly imported species, not only existing in numbers in gardens, green-houses, hot-houses and dwelling-houses, but I find them continuing their kind, increasing in numbers and spreading themselves over various localities, in short becoming naturalized; once naturalized I conclude they become British insects, and should be unhesitatingly included in our Fauna.

Some of these imported species are occasionally found at large, but in all probability, only the individuals which our ships have conveyed in merchandise, ballast, &c.; to these we may, I think, refer Carabus cancellatus and C. auratus: neither of these increase and multiply, and may, along with Calosoma Sycophanta, be properly expunged from our lists. It is not amongst the Geodephaga, however, that any large importations are to be looked for; we must expect the greatest number to consist of such species as subsist upon the various articles which our commerce with other countries is the means of bringing to our shores.

Of the latter kind, those which feed upon the various sorts of corn, pulse, rice, fruits, skins and furs, may be expected to be most numerous. It is not my object here to furnish a list of these imported insects, but I would, as stated above, invite others to give their opinions upon the point in question. There are, doubtless, several other cosmopolitan insects, the native country of which it would be difficult to ascertain: what country, for instance, claims Dermestes vulpinus,—it comes in merchandise from all parts of the globe: the same may be said of Trogosita mauritanica, and of what country is Sitophilus granarius or S. Oryzæ a native? The latter species is omitted by Mr. Walton in his list of native Curculionidæ, but it has equal claims, in my opinion, to being included as British, with S. granarius; I found it very plentiful last summer along the Suffolk coast, near Kessingland and Pakefield: here it apparently has become acclimatized, for I not only found it on the shore, but in sandy spots at some distance inland; I have met with S. granarius in similar situations, but, doubtless, both species are most numerous and most frequently found in granaries and warehouses. Although rice may be the usual nutriment of S. Oryzæ, it must subsist upon other food on the Suffolk coast: the greater number of individuals were found in a sandy ravine or chasm, bordered by fields of barley.

Carpophilus flexuosus, an insect belonging to the family Nitidulidæ, is constantly found in drums of figs, &c.: this species appears to have spread over most parts of the world; specimens have been received from North and South Europe, North and South America, India and the Fedjee Islands: this insect I have taken at large in this country, at Colney Hatch and in Plumstead Wood; I also found it in a fir plantation on the border of Hawley Flat, Hants. Those well-known and universally distributed species, Necrobia ruficollis and rufipes, Ptinus hololeucus, Anobium paniceum, Stene ferruginea and Alphitobius picipes, with, no doubt, a host of other species, which a Coleopterist would be able to catalogue, are now by pretty general consent enrolled in the ranks of British beetles.

I now come to the more immediate purport of this communication; supposing a species to be undoubtedly imported, but which, uninfluenced prejudicially by change of climate, continues to multiply its kind, until by degrees it spreads itself in all directions, and becomes generally known, and its extermination impossible,—at what precise point of time are we justified in naturalizing the insect? I remember at a meeting of the Entomological Society, some twenty years ago, the Ptinus hololeucus being exhibited as a novelty; this species is now, I believe, generally incorporated with the British Ptinidæ. About the same time, 1838, a notice on a minute species of ant which had become so numerous in dwelling-houses that it proved an intolerable nuisance, so much so, that houses were deserted in consequence. I may be allowed here to quote a few observations from my Catalogue of Formicidæ. The ant in question, named Myrmica domestica, by Mr. Shuckard, "has been admitted into the lists of British ants, but is undoubtedly an importation. The Rev. Hamlet Clark brought a number of specimens of this ant from Constantia, in Brazil; these have been carefully examined, and proved to be identical with Shuckard's species. The Myrmica molesta of Say, I consider identical with our insect, specimens from the United States having been carefully compared: it is described as being equally abundant and annoying in houses in that country, and is probably now of almost universal occurrence, like other insects which attach themselves to the habitations of man; South America is, in all probability, its native country."

Myrmica lævigata: I described this species with a suspicion of its being identical with the M. pallidula of Nylander, and, on a comparison of specimens of the small workers only, I did not detect differences which presented themselves when a series of all the sexes were obtained for comparison: through the kindness of Mr. Parfitt I have received examples of the female, and of the workers, major and minor; on a comparison of these with specimens of Myrmica pallidula of Nylander and with those of the Œcophthara pusilla of Heer, I find them identical with the latter insect, the house-ant of Madeira: this ant will, I have no doubt, in the course of a few years, become generally distributed, not only in hothouses, but also in dwelling-houses, and will, in that case, prove a much more troublesome insect than the M. molesta; it is a larger species than the latter, and belongs to the family Attidæ, the species of which have two distinct forms of the working-ants, one, the soldier, or worker-major, being distinguished by a monstrously enlarged head, and strong sharp cutting-jaws: the M. molesta only possesses one form of worker, and is a true Myrmica, according to my view of that division of ants.

Both these house-ants have heen introduced, and regularly reproduce their kind, and will, doubtless, continue to do so, and become permanently located in this country; I have, therefore, included both in my forthcoming work on the ants, and I conclude these rambling observations with a repetition of the question, at what time, and under what circumstances are we justified in including such imported species in the list of British insects?

FREDERICK SMITH.

27, Richmond Crescent,
Islington.

A Late Swarm of Bees: Artificial Swarm. Are the Combs hexagonal or not?—In the 'Zoologist' for January (Zool. 6348) Mr. W. R. Morris, of Deptford, gives an account of a swarm of bees as late as September 13th (a very hot day here, ther. 78°). As I have frequently found very late and very early swarms turn out to be desertions,—the latter also occurring on calm, hot days,—I wish Mr. Morris would let me know the result of the examination of the parent-hive in a future number. I have kept bees for more than fifty years, and nearly as long ago as the time named, on the 4th of April, on a fine calm hot day, I had the "appearance" of a swarm about midday: I found it was a total desertion, which I attributed to having carried deprivation of the combs too far in the autumn; the bees went directly to a chimney some hundred yards distance and were lost. I never saw a regular swarm come off any of my hives without settling first, but on a hot day, with a scorching sun, unless shaded, they, the bees, will not remain clustered above a few minutes. On two or three occasions early swarms were announced (on the 30th of March) in a newspaper and periodical, and, on enquiring respecting two, one, the owner informed me, was a desertion from the combs, having been entirely riddled by the Death's Head Hawk-Moth (*Acherontia Atropos*), and the other swarm the wet got into the combs, from the covering being deficient and the combs becoming mildewed. Newly-hived swarms will often desert a hive if it be musty or dirty, and I have known many desert if there is any tarred twine carelessly used (too often the case) inside in binding straw-hives; this is always fatal, they will never stop. As I am on the subject of bees, I regret to see a most intelligent writer, in other respects, endeavouring to establish a new theory as to the formation of the cells of the workers. All the best authorities for the last hundred years have clearly proved that these cells are hexagonal; there is no other form which affords such economy of space, and nothing, in my humble opinion, displays more of that "Partem Divinæ mentis" (*Virgil*) in these wonderful insects, the bees, than in the hexagonal formation of their cells. There is also too much inclination now-a-days to try apiarian experiments,—the almost total prevention of swarming is carried too far, — for if there be one thing more wonderful than another, it is that particular and extraordinary mode the Great Artificer of the world has ordained to be the manner of increasing their species in throwing off their natural swarms, &c.—*H. W. Newman; Cheltenham, January* 7, 1859.

[I do not understand Colonel Newman's allusion to the Death's Head: does he not mean the honey moths, the larvæ of which *do* riddle the combs?—*Edward Newman*].

Capture of Notiophilus substriatus in the North of Scotland and in Cumberland.—When at Tain, Ross-shire, in September, 1857, I took all the Notiophili that came in my way, and on examining them to-day I find that five of the specimens are, without any doubt, substriatus. They were all taken at the base of the sand-hills, on the sea-shore, down which they appeared to have fallen, in company with hundreds of common Amaræ. The wagtails, which were very numerous, seemed quite aware of this natural trap, and if late in making my round I found that they had been earlier risers than myself, and had eaten up the whole catch, leaving their foot-prints as a memorial of their doings, and as a hint to me to get up sooner to-morrow morning. I have a specimen of the same insect taken on the hills in Cumberland, which is of a fine steel-blue colour. The species thus appears to be widely dispersed.—*Thomas John Bold; Long Benton, Newcastle-on-Tyne, December* 28, 1858.

English Habitat for Quedius auricomus.—Amongst my Cumberland captures of the past season is a very beautiful little Quedius, agreeing fully with the description of Q. auricomus, *Kiesenw.*, in 'Faune Française,' vol. i. 540. I took it beneath *débris*, on banks of the river Irthing, in May, 1858. This species has not, to my knowledge, been previously found on this side the border. Mr. Hardy records it as occurring in Berwickshire, and has described it with great accuracy under the name of scintillans, in the 'History of the Berwickshire Naturalists' Club,' vol. ii. 258. Mr. A. Murray, in his 'Catalogue of the Coleoptera of Scotland,' p. 123, indicates Q. auricomus as "Rare; Berwickshire; near Hamilton." It is also recorded in the 'Entomological Annual' for 1855, p. 123, on the authority of the foregoing Scottish localities.—*Id.*

Note on Zoanthus. — The Zoanthus lately noticed in the 'Zoologist' (Zool. 6349) proves to be identical with Dysidea papillosa, *Johnston*, — an animal formerly believed to be a sponge; it is, however, a true compound polype, and a detailed description of it in its proper character has just been laid before the Zoological

Society. The only question now is whether or not D. papillosa and Zoanthus Couchii are the same; both have been found on the Cornish coast, and, as Mr. R. Q. Couch speaks of the Zoanthus being common there, he, or some other naturalist, may have had an opportunity of comparing them, and will perhaps kindly help me out of my present difficulty.—*E. W. H. Holdsworth; 26, Osnaburgh Street, January* 4, 1856.

Proceedings of Societies.

ENTOMOLOGICAL SOCIETY.

January 3, 1859.—Dr. J. E. GRAY, President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Transactions of the Zoological Society of London,' Vol. iv., Part 5; presented by the Society. 'On the Arrangement of the Cutaneous Muscles of the Larva of Pygæra bucephala,' by John Lubbock, Esq., F.R.S., L.S., G.S., &c.; by the Author. 'Exotic Butterflies,' Part 29; by W. W. Saunders, Esq. 'Monographie des Gomphines,' par Edm. De Selys Longchamps, Membre de l'Académie Royale des Sciences de Belgique et de plusieurs autres Académies et Sociétés Savantes; avec la collaboration de M. le Docteur Hagen, de Koenigsberg; by the Author. 'The Journal of the Royal Dublin Society,' Vol. i.; by the Society. 'Proceedings of the Zoological Society,' Nos. 363—369; by the Society. The 'Zoologist' for January; by the Editor. The 'Athenæum' for December; by the Editor. The 'Literary Gazette' for December; by the Editor. The 'Journal of the Society of Arts' for December; by the Society. The 'Entomologists' Annual' for 1859; 'A Manual of British Butterflies and Moths,' No. 24; The 'Entomologists' Weekly Intelligencer,' Nos. 115—118; by H. T. Stainton, Esq.

Election of a Member.

George S. Mosse, Esq., of Eldon Road, Kensington, was balloted for and elected a Member of the Society.

Exhibitions.

Mr. Waterhouse exhibited a specimen of Tachyusa concolor of Kraatz = Homalota concolor, *Erichs.* The insect was found at the uppermost of the Highgate Ponds, on the 25th of May, 1855. Latterly, Dr. Power has taken the same species at Barnes Common and at the Hammersmith Marshes.

Mr. Waterhouse also exhibited a specimen of Symbiotes latus of Redtenbacher, which he found in sweeping the herbage in a wood near Ryde, in the Isle of Wight, in the summer of 1854: Mr. Waterhouse believed this was the first occurrence of the genus Symbiotes in England.

Mr. Janson observed that he believed the discovery in Britain of Tachyusa concolor was due to Dr. Power, from whom he had received the species some months back; he had likewise seen it in the collection of Mr. H. Adams; Mr. Squire had also met with it at Hammersmith, and had long since placed it in his cabinet with its legitimate specific appellation.

With respect to Symbiotes latus, *Redt.*, Mr. Janson remarked that he had been for some time past perfectly familiar with it as a British insect. He had first taken it beneath the loose bark of a dead tree, in which a formidable colony of Formica flava had established itself for some years; the beetles were moving about amongst the ants. Redtenbacher says (Faun. Austr. 2nd Ed. 371) that "the species" of this genus, of which he describes two, "live among ants." That Symbiotes latus is not, however, a myrmecophilon, in the strict sense of the term, Mr. Janson stated he had subsequently satisfied himself, as he had found several individuals subsisting on a species of mould growing on a rotten elm stump, more than a mile distant from the spot in which he had first discovered it, and certainly unaccompanied by any ant. Mr. Janson added that Microchondrus (*Guérin*), Wollaston, Ins. Mad, 196 (1854) was coincident with Symbiotes, *Redt.*, and that he should probably have occasion to return to this subject at a future Meeting.

Mr. Stevens exhibited some Coleoptera from the interior of Peru, amongst which were a fine new species of Psalidognathus allied to P. Friendii, and an Agaocephala very distinct from all known species of that genus.

Mr. A. F. Sheppard exhibited some Coleoptera taken at Geelong, Victoria.

Mr. Janson exhibited a specimen of Oxypoda spectabilis, *Maerkel*, Germar, Zeitschr. f. d. Entom. v. 217, 47 (1844); Kraatz. Naturgesch. d. Ins. Deutschl. ii. 162, 2 (1856), taken by Mr. R. Hislop, near Falkirk, during the past season, transmitted him by that gentleman for identification. He remarked that the insect had been first found in Saxony associated with Formica fuliginosa, and was hence considered and described by Herr Maerkel as myrmecophilous, but it was subsequently taken near Berlin, among damp fallen leaves, unaccompanied by ants: the individual exhibited occurred "amongst grass." Dr. Kraatz, *l. c.*, gives it as a distinct species, stating, however, that it appears to him not improbable that it will ultimately prove to be a dark form of O. ruficornis, *Gyll.*, but that a long series of examples was requisite, in order definitely to determine this question. Mr. Janson had carefully compared the present specimen with four individuals of O. ruficornis, *Gyll.*, *Kraatz*, and had been unable to detect any structural distinctions, the only point of disparity being in colour: thus, O. spectabilis has pitchy black antennæ, the three basal joints alone red, the thorax and elytra likewise pitchy black, the humeral angles of the latter rufous. O. ruficornis has the antennæ and lateral margins of the thorax rufous, the elytra ruso-testaceous, with the region of the scutellum dusky.

Mr. Edwin Shepherd exhibited a specimen of Stenus palustris, *Erich.*, a species hitherto unrecorded as British, taken by Mr. F. Bond, in the fens near Cambridge.

Mr. Adam White exhibited a sketch of a curious Isopodous Crustacean, recently sent home by F. M. Rayner, Esq., Surgeon of H.M.S. Herald, and taken by him on Flinders and Hummock Island; it belongs to the family Sphæromidæ, but is distinguished from every isopod hitherto described or seen by Mr. White, in having a long horny projection from the epistome; the facetted eyes are conspicuous on each side of the same segment; with them is a projecting horn shorter than the middle one. He named it Cephaloniscus Grayanus, in compliment to the keeper of the zoological collections at the British Museum. Mr. White also made some remarks on the order Isopoda.

Mr. Stainton exhibited, on behalf of the Rev. H. A. Pickard, a specimen of Plutella Annulatella, remarkable as having been taken in a new locality, the Isle of Portland, and as being much whiter than ordinary specimens. The only previous localities in this country recorded for this insect, were the North of England (near Newcastle-on-Tyne), the North of Ireland and Scotland; from the greater contrast of colour in this Portland specimen, it was far prettier than the northern form of the species.

Dr. Allchin exhibited a large Noctua allied to Catocala, said to have been taken near Bolton, Lancashire; he had been unable to identify it with any species contained in the extensive general collection of Noctuæ in the British Museum.

Mr. Walker made the following remarks:—"At a former Meeting, on the occasion of the exhibition of a horn-shaped gall inhabited by a Thrips, discovered by Mr. Foxcroft, at Sierra Leone, I observed that it resembled the horn-shaped gall of the lime-leaf, and that I had not discovered the insect which is the cause of the latter excrescence; but I have since found that its history has been investigated long ago by the botanist under-mentioned:—'Observations Physiologiques sur le development des gales corniculées de la feuille de tilleul de Hollande, et sur la cause qui les produit. Par P. J. F. Turpin.' (Mém. Acad. Roy. Sci. Institut. Fr. vi. 1835)." He noticed that it was inhabited by a mite, which he named Sarcoptes Gallarum Tiliæ, and of which he traced the development from the egg to the perfect insect. He observes that it is not certain whether the mite is the cause of the formation of the gall, in which it does not occur before the middle of May nor after the middle of August, and, therefore, its mode of life during nine months of the year is still unknown. Another horn-shaped gall appears on the leaves of the beech, and is quite distinct from the pyramidal gall lately mentioned here as the habitation of Ocidomyia Fagi.

Mr. Smith communicated a paper intituled "A Contribution to the History of Stylops, with an enumeration of such species of Exotic Hymenoptera as have been found to be attacked by these parasites."

Mr. Waterhouse read the following papers:—"A List of the British Species of Latridius." "A Revision of the British Species of Corticaria."

Part ix. of the current volume of the Society's 'Transactions,' published in December, was on the table.—*E. S.*

York Entomological Society.—At the Anniversary Meeting of this Society, held on the 3rd of January, 1859, the Rev. F. O. Morris was elected President; Mr. J. Birks, Treasurer; and Mr. R. Anderson, Secretary, to whom all communications may be addressed at his residence, Coney Street, York.

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Eggs from Lapland.

MR. J. C. STEVENS, according to instructions from JOHN WOLLEY, Esq., will Sell by Auction, on an early day in March, at his Great Room, 38, King Street, Covent Garden, W.C., some DUPLICATE BIRDS' EGGS, of which many are of unusual rarity, collected last year, 1858, under that Gentleman's direction, in Lapland. Further notice will be given of the day of Sale. Catalogues, will be ready at Mr. Stevens' towards the end of February.

To Naturalists.

ROBERT DUNN, Author of 'The Ornithologist' Guide to Orkney and Shetland,' begs to inform his friends and the public that he has constantly on Sale, at moderate prices, properly prepared SKINS and EGGS of all the ORKNEY and SHETLAND BIRDS; also a great variety of other rare British Eggs, many of which were recently collected by himself in Iceland. A list, with prices affixed, will be forwarded on application (with a postage stamp enclosed) to R. DUNN, Stromness, Orkney.

To Ornithologists.

WANTED, Albino Specimens of BRITISH BIRDS, in perfect preservation. Address, stating name of Bird, price, and whether in the Skin or set up to J. M., 33, Paternoster Row, St. Paul's, London.

To Entomologists.

MR. JAMES FOXCROFT begs to announce to his Patrons and Friends that having been out at SIERRA LEONE upwards of Twelve Months, COLLECTING INSECTS OF ALL ORDERS, he is now engaged in sorting and distributing the Specimens amongst his Subscribers, which have given generally the greatest satisfaction; it is therefore his intention to remain out at least Twelve Months longer, and for that purpose he wishes to receive, through his Agent, Mr. SAMUEL STEVENS, Natural History Agent, 24, Bloomsbury Street, London, Subscribers for the year 1859. Subscriptions for Lepidoptera or Coleoptera £5 each, and for any *two* other Orders £5; to be forwarded to Mr. STEVENS as early as convenient.

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PUPA-DIGGING.—Under this title is reprinted, at the low price of TWOPENCE, the Rev. JOSEPH GREENE's truly useful Paper on this subject. Entomologists requiring it will please send two penny postage-stamps for each copy, and one penny stamp additional for postage. The penny for postage will be sufficient, however large the number of copies ordered.

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Owing to the quantity of contributions long standing over, I am compelled to publish a Double Number, price Two Shillings, on the 1st of March: prepaid Subscribers will receive this without additional payment. There will be no second double number during the year.

The articles on the occurrence of rare birds at Brighton (Zool. 6329, 6331) were communicated by George Dawson Rowley, Esq., of No. 5, Peel Terrace, Brighton.

Captain Hadfield's commentary on previous communications about the cells of the honey bee is too theological for the 'Zoologist.' Will authors who feel disappointed at the non-appearance of their papers oblige me by sending stamps? and I will return them: they must not conclude that their papers are worthless because not accepted: I believe they would, without exception, find a welcome if sent to another monthly of similar purport to the 'Zoologist.

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